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ABSTRACT

A 4-day institute attended by 21 persons representing vocational education, general education, and state and federal government was held to review the state of the art in vocational teacher education. Discussion activities centered around state of the art papers, and this book contains these chapters based on revisions of the major papers: (1) "The Quality of Life in the Seventies and Implications for Vocational Teacher Education" by J.C. Willers, (2) "Assumptions Underlying Preservice Programs for Beginning-Level Vocational Teachers" by J. Moss Jr., (3) "Assumptions Underlying Inservice Vocational Teacher Education Programs" by A.D. Hill, (4) "Curriculum Development in Vocational Teacher Education: State of the Art and Developmental Needs" by E.J. Simpson and M.L. Ellis, (5) "Organizational Structure of Vocational Teacher Education" by R.E. Taylor and A.J. Miller, (6) "The Context of Vocational Teacher Education" by R.E. Taylor and A.J. Miller, (7) "The Need for Vocational Educational Personnel" by T.G. Foran and J.J. Kaufman, (8) "Critique of Manpower Projections for Instructional Staff in Vocational Education" by G.G. Somers, and (9) "Evaluation of Vocational Teacher Education" by D. Sjogren. (SB)

Changing The Role of Vocational Teacher Education

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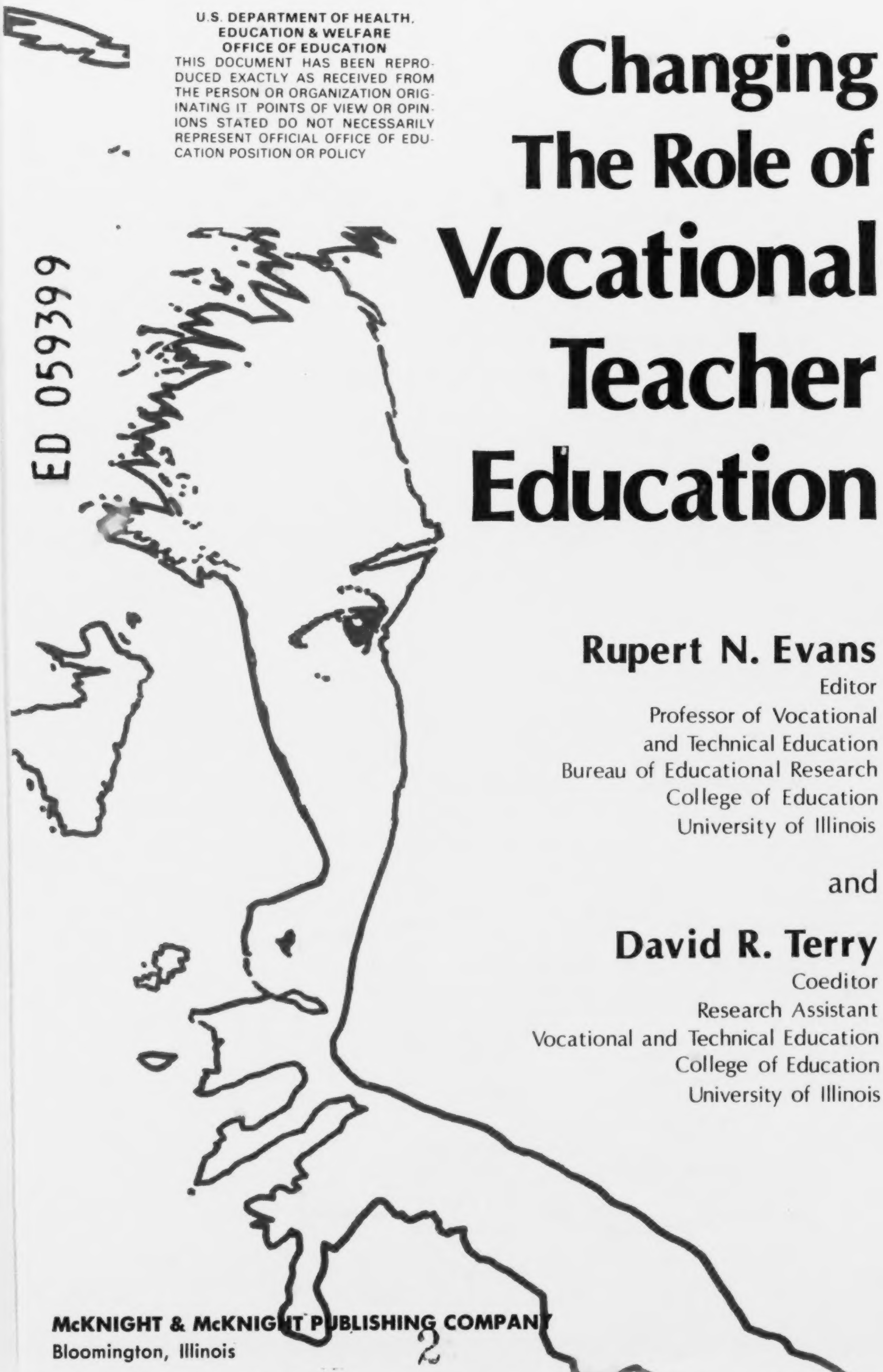

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To the Reader

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State of the Art

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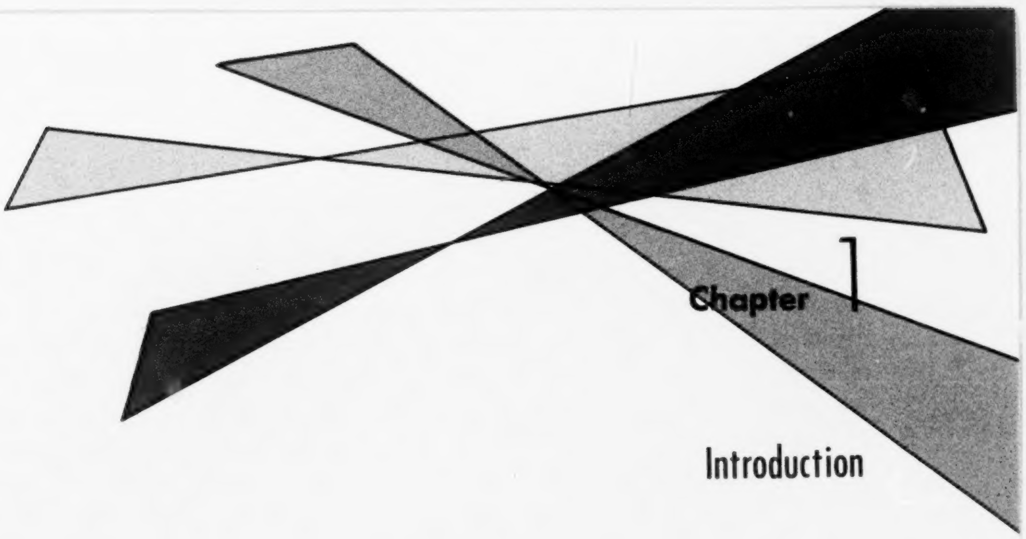

Chapter 1

Introduction

by Rupert N. Evans and David R. Terry

Teaching in colleges and universities is a principal occupation for which universities have prepared graduate students. It has long been noted, however, that many of these graduate students are better prepared to be *researchers* rather than to be teachers. Apparently the assumption has been that given the high level of academic ability and maturity of most undergraduates, it is most important that the prospective college teachers be firmly grounded in *subject matter*. The lack of skills of these teachers in (1) organizing, (2) presenting, and (3) evaluating instruction has been seen as a serious deficiency, but it has been assumed that the teaching skills which are necessary for professors will be acquired gradually on the job. The students are expected to be able to learn *in spite of the deficiencies of their teachers.*

It would seem logical that this unsatisfactory situation is even less satisfactory for the large number of graduate students who are preparing to teach teachers and to teach teachers of teachers. In many universities the largest group of graduate students preparing to be university instructors eventually will be *teacher educators*. They will work with undergraduate and master's degree candidates who are being prepared to teach in the elementary and secondary schools and community colleges of the nation. A smaller, but still very significant, proportion of graduate students eventually will be teacher educators who specialize in teaching advanced graduate students. These latter students in turn will be teaching those who will become teachers in the elementary and secondary schools and community colleges. The Bureau of Education Personnel Development of the U.S. Office of Education has popularized the terms "teacher of teachers" (TT) and "teacher of teachers of teachers" (TTT) to describe these two types of teacher educators.

In all areas of teacher education, programs to prepare TT and TTT personnel generally include at least minimal preparation in (1) organization of instruction, (2) methods of teaching and (3) evaluation of the instructional process. However, for some unknown reason, these programs rarely include a systematic study of the teacher *education process* or of the institutions that are responsible for teacher education. Instead, TT and TTT personnel are taught as if they were to teach anywhere but in a teacher education program or institution. Vocational education, in its preparation of TT and TTT personnel, has devoted no more time and energy than other areas of teacher education to the preparation of its graduate students for their duties as teacher educators. This is particularly paradoxical since a basic tenet of vocational education is that persons who are prepared for an occupational field will more readily enter upon it and progress in it than those persons who have not received preparation for that occupation. The result is that vocational education graduate students who expect to become teacher educators *learn how to become teacher educators by accident* or through on-the-job experience as teaching or research assistants. Usually they are not exposed to a systematic study of teacher education processes and institutions.

Moreover, the teacher education system for the preparation of vocational teacher educators is even worse than has been outlined above. In a very real sense, *virtually no vocational educators have been prepared.* Rather, universities have prepared specialists in agriculture, distributive education, trade and industrial education, etc., with no attempt to show the relationship of this vocational specialty to vocational education as a whole, or to show its relationship to general education. Evidences of this problem include the following situations:

1. **Many institutions offer instruction in only one specialty within vocational-technical education.** Others offer instruction through specialized staffs in various parts of the institution with little or no contact among these semi-autonomous groups of students and staff members.
2. **Teacher education requirements** for initial certification or for upgrading **are widely different in form and in philosophy** from one vocational education field to another.
3. There are very few programs available for preparing or upgrading administrators who have responsibility for the **whole** of vocational education.
4. **Career ladders** within vocational education **are unrelated to the teacher education programs** which do exist.
5. There is **no substantial literature for teacher education for vocational education as a whole.**

If it is true that very few *vocational* educators have been prepared, it is only logical to conclude from this evidence alone *that universities also have been failing to prepare vocational teacher educators* (TT *or* TTT). An optimistic note, however, is the fact that in the time which has elapsed since the passage of the Vocational Education Amendments of 1968, substantial progress has been made in designing university programs to prepare vocational educators. Almost all of these programs are organized on the assumption that competence in a specialized field of vocational education first should be acquired and then, and only then, should an understanding of the whole of vocational education be acquired. No one seriously questions the necessity of each vocational teacher having a specialized field of competence (both in subject matter *and* in specialized techniques of presenting and evaluating that subject matter). What may be questioned is whether it really is desirable:

1. to postpone until later graduate study any consideration of the relationships of a personal vocational education specialty to all of vocational education and
2. to postpone study of the relationships of the whole of vocational education to general education.

Nevertheless, the important fact to recognize is that vocational-technical educators are nearing general agreement on the desirability of each vocational teacher having both specialized competencies and a general knowledge of the goals of the whole of vocational education. Certainly the manner and sequence of acquiring these two types of competencies is less important than the acceptance of the goal that both are essential.

In this book the editors have taken the prerogative of deleting the word *technical* from the often used *vocational-technical* terminology usually associated with writings in this field. If indeed vocational-technical educators are nearing general agreement on the desirability of each vocational teacher having a general knowledge of the goals of the whole of vocational education and of the relationship of vocational education to general education, then it seems logical and essential that vocational and general educators see also the synergistic relationship of vocational and technical education, which too often has been dichotomized. Just as the simultaneous action of all the separate muscles of a man's arm together have a greater total effect than the sum of their individual effects, so also is education more effective when each of its parts is working together harmoniously.

A major factor in generating agreement among vocational teacher educators was a seminar on preparation of professional personnel for vocational education at the University of Nebraska in Lincoln, Nebraska in June, 1968, directed by Dr. Roy D. Dillon. The seminar "was designed for selected deans of colleges responsible for preparing professional vocational educators. The major purpose was to enable those selected policy-decision makers to consider and make recommendations concerning organizational and operational strategies for resolving critical vocational education personnel supply and demand problems, and to recommend ways of implementing recent and pending legislation" (Dillon, 1969, p. 1).

In addition, certain key state directors, vocational teacher educators, and staff from the U.S. Office of Education were invited. Most of the deans who accepted the invitation were from colleges of education or from colleges of agriculture. Various patterns of organization and of faculty and student selection and preparation were presented. Discussion groups and task forces considered problems in:

1. administering teacher education programs in vocational education,
2. setting goals and choosing techniques for effective selection and recruitment of vocational education personnel, and

3. implementing of Education Professions Development Act (EPDA) legislation.

An immediate evaluation of the seminar by participants was only mildly favorable (compared to similar evaluations of other seminars), but the one-year follow-up evaluation was considerably more encouraging. A part of the follow-up indicated that revised programs of administration of vocational teacher education programs were underway in a number of institutions in a number of states. The Nebraska conference may well have been responsible for many of these changes, for it was the first national meeting which gave full attention to the problem of vocational teacher education.

TEVOTEC Institute

In late 1969, a proposal for a TEacher Education in VOcational and TEChnical Education (TEVOTEC) Institute was submitted by the University of Illinois, Urbana, through Mr. Sherwood Dees, Director of Vocational Education in Illinois, to the Bureau of Education Personnel Development, United States Office of Education (USOE). This proposal was approved by the USOE staff, headed at that time by Dr. William Loomis.

On April 7, 1970, a group of twelve persons (see Appendix A) representing vocational education, general education, business and industry, and state and federal government met as a council to plan the Institute and to suggest topics and writers for a series of papers describing the state of the art in vocational teacher education. The group also suggested the names of a number of persons who should participate in the Institute as reviewers of the papers.

Immediately following this council meeting, steps were taken to obtain commitments from authors for the state of the art papers. At least one draft of each paper was prepared in advance of the Institute, and in a number of cases, several preliminary drafts were prepared.

Twenty-one persons (see Appendix B) spent the week of October 5-9, 1970, in an exhaustive (and exhausting) review of each of the state of the art papers. The Institute was held in an isolated rural setting which provided a minimum of distraction from the work of the conferees. Typically each half day was spent in an oral presentation of one state of the art paper by its author followed by a spirited discussion of it by the Institute participants. Papers were not presented in their entirety since each Institute participant had read them in advance. Rather, the author presented a summary of his or her paper and noted particular points which the author felt should be emphasized during the ensuing discussion. Special attention was paid to controversial issues, unresolved conflicts and missing data. In the discussion which followed, the Institute participants noted omissions, errors, and over- and under-emphasis of certain topics. It was obvious that the participants had done their homework well and that they represented a wide and healthy variety of points of view.

Each author made copious notes of ideas to be used for revision of his or her paper. In addition, time was reserved at the end of each half day session for the Institute participants to prepare a written critique of the paper which had just been presented, together with written suggestions for modification. These individual critiques were later typed and transmitted to the author.

The final half day session of the Institute was devoted to consideration of the state of the art papers as a whole. This session was particularly useful in noting instances of redundancy and omissions among the papers. A major gap in the treatment of studies of supply and demand for vocational teachers was noted and was later remedied by inclusion of a paper by Terry Foran and Jacob Kaufman.

This book contains the nine papers. With the exception of the one paper by Professors Foran and Kaufman, each chapter is in a very real sense a product of interaction among the author, the Institute participants, and the editors. It was understood from the beginning that the editors would have the final decision as to what should or should not be included and that the chapter authors would have the option of having their names associated with the final form of the chapter which they originally wrote. All of the authors have chosen to have their names associated with their respective chapters, but in every case, major revisions have been made at one or more stages during the review and editing process.

Plan of the Book

The "institute" method of teacher education has been justly criticized on two grounds:

FIRST, that the typical institute brings together a group of participants for such a brief time that no substantial behavioral changes can be achieved.

SECOND, that institute proceedings very often are not disseminated at all or are distributed only to institute participants, often in a form which is understandable only to persons who have participated in the institute.

Plans for the TEVOTEC Institute were designed to minimize both of these problems. First, the majority of Institute participants were involved in a planning council some six months prior to the Institute proper or were involved directly as writers of state of the art papers. Moreover, the authors were involved more or less continuously for over a year in the process of development and revision of their work. Second, through the cooperation of the U.S. Office of Education, the State Board of Vocational Education and Rehabilitation in Illinois, and McKnight & McKnight Publishing Company, the *revised* state of the art papers are here presented in textbook form so that they may be available to any interested person. A deliberate attempt has been made to structure the book so that attendance at the Institute is not a prerequisite to reading and profiting from the material in it, though it is obvious that Institute participants have received insights into the process of vocational teacher education which unlikely would be available immediately to most other readers.

Following the introduction the book begins in Chapter 2 with a description and forecast of life in the 1970's and the relationship of vocational education and vocational teacher education to this life. It is written by Dr. Jack Willers of Auburn University, who is one of the few capable educational philosophers who have been concerned with the philosophy of vocational education. More than any other chapter author, his views provoked controversy and reflection which affected markedly the rewriting of each of the other state of the art papers.

Chapters 3 and 4 describe the assumptions, rationale, and procedures for preservice and inservice teacher education. It is particularly interesting to note the description of the markedly different assumptions which underlie preservice teacher education programs for the various subject matter fields of vocational education. It is clear that persons from a particular service area, which has traditionally relied upon university preparation to provide the majority of the subject matter to be taught, will tend to find unacceptable a teacher education program which relies upon nonacademic experience and employment as the source of subject matter, and vice versa. Moreover, it is interesting to note that persons from certain vocational subject fields believe that the prospective teacher should acquire his or her subject matter while expecting to become a teacher, whereas in a different field the experts believe the subject matter should be acquired while the learner is expecting, not to be a teacher, but to be a worker for the rest of his life. Obviously different patterns of preservice education lead to different patterns of inservice teacher education.

Chapter 5 examines typical and desirable curricula for vocational teacher education, while Chapters 6 and 7 consider administrative and structural patterns in teacher education as well as exterior constraints such as certification which impinge directly on teacher education programs.

Chapter 8 represents an example of one of the more sophisticated attempts to estimate supply and demand for teachers in vocational education, followed, in Chapter 9, by a stinging critique of the data and methods which are available for such forecasts.

Chapter 10, the last of the state of the art papers, examines, from a variety of standpoints, the rationale for procedures of evaluating teacher education programs.

The final chapter summarizes some of the more important ideas and conclusions from the preceding chapters.

Possible Uses of the Book

The basic philosophy expressed in this book is that a systematic study of teacher education processes and institutions is not only desirable, but it is mandatory for vocational teacher education. If it is successful in gaining acceptance for this point of view, this book might well become a text for a course in vocational teacher education which could serve as a basic foundation for those graduate students in vocational education who expect to become college or university teachers of teachers (TT) or those who expect to conduct doctoral programs for persons who expect to become the teachers of those who will teach teachers (TTT).

Second, since it is assumed that very few persons currently employed as teacher educators in vocational education (or indeed in any phase of teacher education) have studied systematically the rationale for or the processes of teacher education, it is hoped that a study of this text will constitute an important facet of *inservice education for teacher educators.*

Third, it is hoped that the appearance of this book will encourage other scholars and practitioners to delve further into a study of the institution of teacher education and to produce ideas and facts which will further illuminate this field.

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2 Chapter

The Quality of Life in the Seventies and Implications for Vocational Teacher Education

by Jack C. Willers

Perhaps the most accurate description of the quality of life to be lived in the Seventies is "revolutionary." The debate continues to intensify between those who diagnose the current increase in violence in our nation as isolated instances of frustration and anger, and those who believe we are moving from confrontation and terrorist bombings to all-out guerrilla warfare (Friedman, 1970).

The revolution of our times embraces different kinds of societies, religions, political and economic ideologies, races, and more recently, the generations and the sexes.

To think about the future — even the immediate future — is dangerous, but not to do so will be disastrous. It is dangerous simply because we are now aware of our capacity virtually to create the qualities of human experience and environmental interrelationships of the future. Man, it is here assumed, contrary to more pessimistic and less responsible social philosophies, is not only a part of an evolving, undetermined reality; he is that part of reality which has advanced to the extent that he can now define the undefined, not merely predicting, but also creating his own future — his values, social functions, and qualities of experience.

Not to accept the challenges and dangers of deliberately designing the future can be disastrous. Arbitrary cultural drift leaves us at the mercies of unknown evolutionary accidents and social mutations which are every bit as fearsome as the predictable catastrophies we may very well consciously heap upon ourselves. But to posit the power of men to build our own futures requires that a clear distinction be made between "planning for the future," on the one hand, and "planning for a future," on the other.

Much of education, especially vocational education and the preparation of teachers, is justified and financed on the assumption that there is a job or a classroom waiting in future reality "to be filled" by the student — the soon-to-be technician or teacher — who must "be ready" when his or her time arrives. To prepare for a supposedly existing future is merely half the task, which may explain in part why very few promising educational plans succeed. The "larger half" of the task is in creating the qualities and realities of the future which will harmonize with learned abilities and aspirations. Otherwise, we plan for a future which never will be, or, what is worse, one for which there are no takers.

The vocational teacher education programs of today and tomorrow which succeed only in integrating teaching and work skills with limited general education and cultural orientation will no longer suffice. This much only is merely to plan *for* the future. The vocational teacher and his students — the workers of tomorrow — must be prepared to help plan their future realities with the realization that none are guaranteed, nor are any inevitable. This social skill will require not only vocational flexibility but a scientific alertness to evolving problems and the ability to control social change.

Vocational teacher education which takes into account the social impacts and qualities of today's living is *responsive*. It will at least try to meet the needs defined by the broader social domain beyond the school and outside the factory.

But something more than responsiveness is required—something that might be called *relevance*, a responsiveness that reevaluates and requalifies the social realities, so that vocational teacher educators are not merely reflecting the characteristics of contemporary life, but to some extent are shaping and redefining those characteristics.

Responsive and relevant education does not determine future social change but rather prepares the worker and citizen to participate effectively and meaningfully in decisions about what social changes shall occur and what methods shall be utilized to effect those changes.

Man as a Multiplicity of Media

Alvin Toffler (1970) in his recent social and cultural criticism entitled *Future Shock* depicts a superindustrial era in which we will produce and enjoy almost any conceivable psychic or material good. Automation and the knowledge explosion will create an "Age of Transience" in which our total experience will be engulfed in the changing, the temporary, and the fleeting. Will man be able to survive the freedom and dangers of "future shock" wrought by too much change experienced too quickly? Only, claims Toffler, by regulating the rate of technological change and dedicating education to the development of "future-consciousness."

Contrasted with these both frightening and promising prospects are the realities of the moment: frustrated, often defeated, social and economic aspirations; a loss of faith in American education, even in ourselves — in human worth and dignity; a failure of nerve, a flight from reason, lest objectivity and rationality fall short of coping with environmental problems and psychic phobias. While the future demands planning for the consciousness of it, we lament the loss of past stability and traditional values, and are caught up in a present that claims our exclusive attention.

Apathy, escape, alienation, and cynicism characterize the worlds of work and learning. The boredoms, frustrations, pressures, and conflicts hardly predict a utopian future free from anxieties, needs, and necessities. In times like these, when unknown prospects of a science-fictionlike future require that more and more of us learn to forecast, to plan, and to create, we are increasingly drugged into complacency by overexerted authorities; the drudgery, monotony, and routine of work; and the drive for immediate gratifications (Weston, 1970; Gooding, 1970).

The inconsistencies between what the future most likely promises and what the present provides or fails to provide may very well be the dominant challenge to vocational teacher education now or in the immediate future.

How, then, to organize and provide for vocational education which enables the worker to enjoy the rewards of the present, yet, at the same time, remain free to participate in defining the future is our main question. Its answer will not be easy, but most likely lies in the direction taken by some general and liberal arts education in rare efforts to overcome exclusiveness and fragmentation. Thus, learning experiences traditionally bifurcated and dichotomized into unrelated, disjointed studies of psychology, economics, history, sociology, biology, etc. *ad infinitum* are being gradually integrated and correlated as interdisciplinary inquiries into the interpersonal, the intercultural, and the international. Curricula have begun to reflect the newer concept of open-ended reality as range, extension, continuum, and process in contradistinction to the concepts of prescribed reality composed of concrete, unrelated atoms or substantive entities. Insofar as vocational teacher educators have imitated and now continue to reflect the vested interests inherent in traditional so-called liberal education, there can be little hope of resolving the conflicts between present realities and future demands.

The teaching of separate, distinct vocational skills can be as irrelevant and isolated as the classical curriculum. Accordingly, vocational teacher educators should lead the way in preparing vocational teachers whose primary concern is not in reproducing themselves by instructing in this or that skilled craft alone, but rather in facilitating self-learning for career development.

The men and women who have been taught to think of themselves as machinists or nurses, or even instructors, will be especially subject to the shocks of future change. Those who best survive the future will consider themselves (as do those today who are achieving the greatest success) not so much as persons who have a certain role or do a particular job, but as persons involved in the experiences and the processes that result in an extension of themselves along a time-space continuum of *interrelationships, renewal,* and *reconstruction*. It is no longer sufficient to be somebody who can do something worthwhile. Human development is essentially the development of functions which can be used in many ways to achieve changing goals. Thus, man is a multiplicity of media! And the finest development of humanity is in terms of career in the sense that one is becoming an ongoing process, using oneself — using one's own uses — voluntarily, deliberately, and intellectually.

To become merely *useful* may well mean in the future, if not now, to become useless. To become employable, employee, or employed will not be enough to satisfy self-fulfillment. Man must learn to make of himself the *uses* which can be functionally reapplied in unforeseen directions. It is now archaic to teach men merely how to work; they must be taught how to *become* that work.

When the conceptual separation of (1) ego and experience, of (2) self and skill, and of (3) person and process is overcome in vocational teacher education, there will be new questions to ask. However, at least the alternative resolutions to these new problems will be relevant to the future.

The New Society

Rising Aspirations

More people in this nation and throughout the world are demanding an increasingly larger share of economic goods at a crucial time when world-wide populations are exploding and some natural resources are rapidly diminishing. As the means of communication improve and as mobility is enhanced, the problems generated by rising economic and political expectations will be compounded. We appear to be in the midst of a self-propelling revolution — the more one has, the more one knows there is yet to achieve, the greater one's expectations and aspirations, and the greater his or her disappointments and anxieties for having more (the hedonic paradox). Like Oliver, the world, too, wants more. And it is, gradually and generally, getting more, but liking it less and less.

The technological advances in mass communications continue to add to social unrest by increasing economic and political aspirations faster than our systems can make them available. Mass media, especially the television, display departures from social norms and ideals before increasing rebellious youth have learned from home and school what values these norms and ideals reflect (Mesthene, 1970, p. 33).

It would be tempting for vocational education programs to prepare future teachers to persuade the working masses to be more easily satisfied with shorter working hours, better working conditions, and a relatively larger share of economic goods. After all, as it was successfully argued during the early years of the industrial revolution, some must remain at the lower levels to stabilize the expanding economy. Material values are the least noble (so reasoned the more affluent), and suffering has its eventual rewards, also.

The ideology of eighteenth and nineteenth century capitalism, however, no longer persuades and sooths. Massive redistribution of properties, resources and opportunities is occurring, gradually but surely, throughout the world. Vocational teacher education can play a significant role, not by making provisions for drugging the worker into early satisfaction, but by laying the foundations for continuing development and usefulness. Rising aspirations must be matched by increased "development of the higher mental processes and skills — originality, creativity, problem-solving proficiency, diagnostic skill, inventiveness" (Fattu, 1964, p. 33).

Population, Environment, and Suburbanization

Our environment will continue to become increasingly crowded despite the fact that the immediate threat of the upward population trend has lessened. Although the rate of increase in the population is declining, more and more people will be clustering in relatively fewer urban and suburban areas. The 1970 census is expected to indicate that approximately 71% of the population live in the 230 metropolitan centers of the United States, an increase of 4% during the previous decade (*Flight From the Cities*, 1970). *Most of this increase is within the suburban areas*, with inner-city populations showing a general decline. The widespread social and political impacts of this continuing move to the metropolitan areas, especially to the suburbs, will affect the needs and objectives of our educational systems and training programs.

There will be increasing demands to provide ample low-cost housing and federal housing programs with tenant participation in their management, operation, and improvement. Training programs for housing project managers have been urged by the President's Task Force on Low Income Housing (*Report of President's . . .* , 1970, p. 12). The use of modern construction technologies, including prefabrication and involving off-site certification according to national standards, will create demands for new skills. These competencies are but examples of the many needs of our society produced by the changing life styles and patterns of industrialization, urbanization, and suburbanization.

Increased suburbanization will also amplify the pressures for *cleaner environments* in areas where industrial pollution is on the increase. Increased suburban population will also require more convenient and efficient transportation and communication systems. Such social pressures and cultural trends obligate vocational programs and vocational teacher education not only to provide skilled manpower and the professional competence to train such manpower, but also to provide atmospheres of learning in which novel, imaginative skills and products matched to these perplexing problems will be created.

Further, since most of the jobs of the future will be in the domain of social services, less vocational emphasis will be given to product manufacturing. Therefore, workers must develop human behavioral skills to understand human needs, desires and interests. This innovation may call for a general realignment of psychological factors related to the behavior of skilled workmen which traditionally have been emphasized in vocational education programs. Orientations which in the past have leaned only toward *goals* in the form of finished *products* may increasingly focus on the *means* as continuing service *processes*.

Success, depending more on the quality of human relationships, less on the quantity of products, will certainly be more difficult to evaluate and, therefore, to appropriately reward, and may likely be far more difficult to achieve. Vocational teacher education programs must certainly take into account the psychological variations of professional expertise required of those working primarily to produce and of those working primarily to serve.

The interdependency of occupations — among fellow-workers, businesses, trades, and even industries — require more face-to-face personal encounters today than at any time since the days of the craft guilds. There are, accordingly, more opportunities in work situations for complaints, hostilities, criticisms, and harassments which reflect and affect personal attitudes. Divisiveness easily generates between foremen and workers, minority and majority groups, young and old, etc. (Gooding, 1970). Vocational teacher education programs will do well to respond by providing more meaningful understandings of the psychological principles of human behavior, and how these are taught to others.

Technology — Blessing or Curse?

Changes in the quality of life brought about mainly by the technological revolution have been interpreted both positively and negatively. Both persuasions have limited merit and some partial truth. What is probably closer to the whole truth is that, according to Emmanuel Mesthene, Director of Harvard University's Program on Technology and Society, "technological change creates new opportunities and new problems at the same time and in virtue of each other" (Mesthene, 1970, p. 34).

Jacques Ellul is one of the pessimistic critics of technological change, who, along with Lewis Mumford and Hannah Arendt, predicts Orwellian disutopias in which the individual is reduced to a cog in a social machine dominated by a technocratic elite. The monolithic technical world foreseen by Ellul cannot be checked or guided. People are enclosed in this artificial creation separating man from his ancient milieu and his natural framework, and there is no exit and no escape. "The further the technical mechanism develops which allows us to escape natural necessity," claims Ellul, "the more we are subjected to artificial . . . necessity of technique which is not less harsh and implacable for being much less obviously menacing than natural necessity" (Ellul, 1964, p. 429).

Man will continue to master the machine, argues Ellul, but only at the price of individuality. The only answer lies in applying the human techniques of education, work, vocational guidance, propaganda, and medicine to convince the acquiescent slave worker that he is free and happy (Ellul, 1964, pp. 335-387). But Ellul in assessing the values and disvalues of technology fails to heed two dangers of which he shows himself, elsewhere, to be aware:

1. to define man in mystical, *a priori*, nonscientific terms, and
2. to forget man's adaptability through practical, problem-solving intelligence.

Thus, Ellul speculates about what man was intended to be and do and experience without considering what he has done and can do about shaping his own milieu and directing his own future. He also conveniently forgets the actual conditions of the ancient milieu framework of man, while understanding the versatility of man to endure.

On the other hand, those who are incurably optimistic about technology would lull us into forgetting or ignoring the dangers inherent in:

1. over-massing workers,
2. environmental pollution,
3. exploitation of human resources, and
4. attendant destructive possibilities in technological change.

Such change dislocates business, makes some jobs and skills obsolete while creating still others, and thereby destroys and creates changed employment patterns. These problems cannot be separated from the new opportunities created by technological advances.

Accordingly, vocational teacher education programs will have to assist in providing a balanced view of the ills and benefits of technological change. Of course, some vocational teacher educators are likely to have already overrated the values or underestimated the adverse effects of technology on our human and social conditions. Otherwise they would not have entered or remained in vocational education, except as a self-appointed radical martyr with a cause to champion — which is always a high psychological and social risk, rarely justified and even less often successful. The vocational teacher educator who chooses to dismiss the inherent dehumanizing effects of technology as myth is thus likely to convince future teachers that little or nothing need be deliberately taught or accomplished in order to counter threats of technology to the worker's individuality, freedom, and well-being.

To avoid this dilemma, vocational teacher education programs will have to include an increasing number of studies not aimed directly at teaching the future teacher to prepare others for gainful employment. These *teacher* education programs must serve as examples, to be emulated by the *vocational* education programs, whereby the economic, political, and general social conditions of the *worker* are increasingly brought under his control and direction without neglecting the skills and knowledge required by the *work*.

Thus, the vocational teacher educator, the vocational teacher, and ultimately the worker (to avoid or offset the otherwise devastating effects of technological change) must learn more of the communicative skills of group and social organization which aid men to retain and amplify the rewards of their vocational skills and efforts. They must become more knowledgeable of the psychological and social theories to be applied successfully and satisfyingly to the development and interaction of men and their political and economic organizations. The demands and dangers of a technological society as well as its economic opportunities and human possibilities must be learned if vocational capacities are to be maximized. It would be nothing short of criminal to teach a man or woman a means of gainful employment and leave it altogether to others to assure that these means would not be used by an autocratic or technocratic society to limit or destroy the humanity and individuality of that worker.

Vocational education has always *intended* to free the individual: to free him from the drudgery of unskilled labor, from the poverty of uselessness, and the uselessness of poverty. But a trained worker is more valuable — and perhaps therefore more vulnerable — to those who deliberately exploit and to a system which aimlessly dehumanizes. Vocational teacher education, therefore, should face realistically the dehumanization of technology, which may not be inevitable but nevertheless is a real possibility; and it should make provisions for the worker and his teacher to employ the rational methods of problem solving and practical intelligence to control increasingly larger parts of the worker's experience and to direct his future.

Affluent, Consuming Society

The increased production of automation has finally forced this nation to recognize the ironies of its own affluence. While most of the world is still struggling with the problems of production, this nation is trying to resolve the perplexities of an affluent, consuming economy. The real problem is no longer production *but distribution*, and whether science, operating in the social domain, can resolve the problems of distribution as the physical sciences have resolved the problems of production. Can buying power be distributed sufficiently to maintain the wheels of automated production? Only, claims Margaret Mead, if men and women are willing to give up "the old insistence . . . that in order to share in the society's wealth, one must do productive work" (Mead, 1966, p. 68).

Automation has made impotent the notion that, unless one works, he or she must live in humiliation and deprivation, or pay the penalty of starvation. If anthropologist Mead is correct in stating that society faces a time when work will be a privilege open to all *by choice* but forced on none by threat, the ethical foundations of vocational teacher education must be drastically reassessed.

In the first place, the values of vocational education must themselves be reevaluated. In the future, vocational competence can no longer be presented as a necessity without which the buyer cannot survive. Vocational education will increasingly require decision — not merely a choice of vocations, but a choice to work, or not to work. As an increasingly affluent people continue to choose vocational education apart from social and economic threats, wider varieties of choices and more interesting choices of vocational training must be made available. That which is not necessary or mandatory must be appealing and attractive.

Vocational educators and those who teach them must learn to fill new roles in an increasingly productive, privileged society. They will not offer salvation from social humiliation and economic deprivation. When work is truly free (not just in the sense of having freedom to choose where to work and at which vocation, but in the sense of being free to choose *not* to work), then vocational educators will represent more opportunities for self-realization, and fewer demands for adjustment of the worker to objective economic realities. With this in prospect, vocational teacher education might do well, in its own self-interest, to promote a reformation and broader acceptance of social welfare which provides for individuals who contribute to the consuming society in ways other than holding a job for which they are paid, from which they might be fired, and without which they would suffer or starve.

This somewhat bold, perhaps overly optimistic, vision of the future may seem ridiculous to some. For a few it will be threatening. Others will argue that man was made to work, and to allow him not to work would be sinful. But do we really know what was intended that man should do? Perhaps he was made to determine for himself what he was made to do, or not do. And if it were ordained that man should always work, perhaps a part of his work is to redefine the fundamental nature of work itself, as has been done at least three times in man's long evolutionary development (Frankel, 1958).

Whatever position might be taken regarding these philosophical perplexities, mankind has come too far not to be inquisitive about the prospects of freedom for all not to work rather than just a privileged few. Such academic curiosity is not intended, however, to detract from pressing current realities: the rise in the number of unemployed and school drop-outs, continuing racial conflicts due to inequalities of educational and economic opportunities, and devastating counter-cultures based on drugs and violence. Vocational teacher education may discover that present problems have resolved themselves into more complex social forms requiring still newer, more imaginative and daring approaches before real solutions can be made to these problems.

As a teacher educator in an economically depressed section of the United States once said: "There is an advantage in being behind; you don't *have* to make *all* of the mistakes made by those who are ahead." But, if vocational teacher educators have the vision and daring, they will concentrate on creating the future. To do so, they must know and learn from mistakes of the past and present. They must also find the will and intelligence to do something for which educators are little noted: *to respond to the decisive future rather than the determinative past.*

The Demands of Innovation

The Economy of the Knowledge Industry

As late as 1900 the vast majority of Americans were farmers living in rural areas. By 1940, industrial workers, especially semiskilled machine operators, comprised by far the largest single group of employees. Within the last decade the largest single group of workers has become the "knowledge workers" of the service industries — managers, professionals, and technicians, who acquire, produce, distribute and apply *ideas* and *information*. By 1980, at the latest, this group which applies facts and concepts rather than physical brawn and manual skill to production will make up the majority of working Americans (Drucker, 1968, p. 264).

We have become a nation of knowledge workers employed in knowledge industries serving *knowledge consumers*. Knowledge is already a central cost in our economy; its productivity is a key to national and individual economic success. Our "primary industries" are no longer those which make the products of nature available to us; they are the knowledge industries. And, for the most part, knowledge workers have replaced the farmer and the men and women of the assembly lines as the backbone of our economic growth, so that "knowledge is now the main cost, the main investment, and the main product of the advanced economy and the livelihood of the largest group" (Drucker, 1968, p. 264). Knowledge itself, therefore, has become productive, so that its systematic acquisition and application are the novel foundations of work and production.

Of course, neither the Seventies nor any other foreseeable decade will witness the elimination of the need for relatively unsophisticated, unskilled, and semiskilled manual labor. But the rising demands for knowledge workers seem unlimited. It has been estimated, for example, that in the next fifteen years or less the economy will support, even require, a million more computer programmers, another half-million systems designers, engineers and information specialists, and perhaps an additional two million highly trained, skilled workers in allied health occupations. Thousands, millions of the knowledge workers demanded in our immediate future will not be trained in a specific skill, to use a specific set of tools performing one specific task in one specific way. They must be trained for entire operations and complete functions requiring the application of several, if not many, interrelated skills based on knowledge applied in production and service. Furthermore, the knowledge worker will apply *theoretical* knowledge acquired *formally* rather than skills gained through apprenticeship. His tools are more likely to be computer feed-outs, graphs, charts and texts rather than the traditional craftsman's tools.

Peter F. Drucker (1968, pp. 267-268) in *The Age of Discontinuity* notes four "fundamentals of the knowledge economy" which are already having far-reaching effects on the ways we work and prepare for work, and will, therefore, have significant implications for programs preparing vocational teachers in particular and for teacher education in general:

1. The manual worker may experience increasing leisure time, but those in the knowledge industries are working increasingly longer hours.
2. The knowledge economy does not eliminate skills, but rather uses *knowledge instead of experience* as a foundation for the acquisition of skills and the provision of services.
3. Although the knowledge economy eliminates neither skill nor work on the part of the knowledge worker, it has brought about a revolution in his life style. Drucker locates the greatest impact of the knowledge economy on the increases in both the opportunities to make individual vocational choices and the accessability of education and training.
4. Vocational opportunities in the knowledge industries exist mainly in large businesses, governmental agencies, universities, research laboratories, hospitals, etc. Thus, the age of independent individualism has given away to cooperative team effort in multifarious bureaucracies.

The effects of these fundamentals of the knowledge economy on vocational teacher education may not be difficult to fathom, though it would be surprising if their total impact could be clearly discerned.

Traditional and Innovative Concepts of Skill

Vocational teacher education faces one of its greatest challenges with respect to the traditional concept of "skill." Skill was once defined in vocational education as the ability to perform a single, specific task using a fixed set of tools with manual, physical force. Once learned, a skill was considered to be instrumentally valuable for the remainder of one's life. The vocational educator proudly assumed that he had provided a lifetime gift by teaching the student to perform a craft skill. It never occurred to the vocational educator (and may still never occur to some today) that skill training in this traditional sense prepares students for vocational obsolescence or at least economic disappointment, if not outright social and psychological disillusionment.

Automation has changed most of this by applying ideas, hypotheses, and problem-solving plans of action to the organization and control of other ideas in the work processes of producing, distributing and serving (Drucker, 1970, p. 337). Skill as defined above is becoming increasingly meaningless and obsolete in our changing technical and automated economy.

Skills, therefore, have lost their property of eternality and have assumed the quality of momentariness. Skills come and go, almost with the twinkling of an eye. "We may need, therefore, a change in the very idea 'skill.' Instead of being what one has learned, skill will have to become *the capacity to learn,* that is, to apply ideas regarding work to new tasks" (Drucker, 1970, p. 339).

We are only too familiar with the rapid obsolescence of many skills once thought to be enduringly useful. But there may be some question as to whether or not this realization has actually affected the time-worn interests of many educators who retain in the curricula, and in their own teaching styles, outdated concepts and methods. Certain of the skills of electricians, plumbers, steel workers, etc., that were once cohesive are now to a great extent divided among many work functions performed in varied places. Also skills that heretofore were never needed together in one place at one time are now often required, at least temporarily, of a single person attacking a new problem or seeking a new goal.

Vocational education in the Seventies, therefore, faces the dual task of both *remedial and preventive career development.* First, some whose skills have or soon will become economically disfunctional must be taught new skills in a period of life when "learning new tricks" is sometimes thought to be difficult, if not impossible. The perplexities of identifying and preparing additional vocational teachers for this remedial effort are at best *staggering.* New inspirations to match new challenges are now the order of the day in educating teachers of vocational teachers.

Second, the more novel skills of the knowledge economy must be taught in ways that prevent the worker from becoming obsolete, even if his or her vocational skills eventually do. Youthful vocational students are no longer supported by the pride of continuing family or local occupations and skills. If footprints of fathers are there to be followed by sons, they often lead to vocational dead ends. Unfortunately for many young men (*especially* young women), there are simply no vocational paths which clearly avoid future obsolescence.

Both the remedial and the preventive task for vocational education involve as much a *personal and emotional problem* as a social and economic dilemma. The individual does not usually enjoy the ordeals of change, especially if change affects those skills which are viewed as a part of one's person. And while contemporary society has become vastly innovative, it has as yet developed very few members of society who relish undefined career patterns of life. We have had time for changes, *but we have not had enough time to change our attitudes toward change*. It is, then, reasonable to conclude that remedial and preventive education for new skills is already demanding of vocational teacher educators *a psychological and sociological understanding that goes far beyond the usual pedagogical requirements and vocational expertise.*

Conflict and Dissent

Cultures in Conflict

In light of the gaps, discontinuities, and violence of the recent past, it is hardly insightful to suggest that our immediate future will be characterized by conflict. The young and the old, the rich and the poor, the minorities and the majorities, etc., will to some degree be pushed toward confrontation and violence. Whether this nation is headed for a severe degree of revolution and anarchy remains to be seen. History indicates, however, that societies rarely allow the movement toward violent individualism to go so far that it cannot be checked by processes of *standardization, social control, and authoritarianism.* Of course, severe dangers to social order and continuity exist at *either* extreme.

Our present conflicts are rooted in intercultural antagonisims and ideologies. American society, it is claimed, is at the breaking point as the traditional culture, based on scarcity, collides with a new culture "based on the assumption that important human needs are easily satisfied and that resources for doing so are plentiful" (Slater, 1970).

This notion of the *counterculture* conflicts with the assumption of the old culture that people must compete for limited resources. Thus, this old culture gives preference to technological requirements, competition, the producer, and the concentration of goods over the priorities of the new counterculture: human needs, cooperation, the consumer, and resource distribution, respectively. The ideologies of this counterculture argue that the fear of scarcity is a man-made myth which exists only to maintain the old culture which cannot survive without it. Thus, "Americans continually . . . kill someone to avoid sharing a meal which turns out to be too large to eat alone" (Slater, 1970).

But the counterculture itself is not without flaw. It is based on romantic notions of individualism and idealistic overtones of easy, instant satisfaction. As the conflicts within our society take us closer to both extremes of authoritarianism and anarchy, the advocates of social order and control, on the one hand, and those seeking private, personal, subjective satisfactions, on the other, are polarized.

Vocational teacher education, to be effective among these conflicting cultures, will have to develop philosophical foundations which discourage movement toward either extreme. To avoid the inadequacies of the old culture, the relationship between work and personal happiness should be reconsidered. What is the objective of work? To produce more goods, of which the old culture claims a scarcity, or to contribute through production to personal well-being, which the counterculture claims to be the highest good? Should a worker sacrifice time, physical strength, and mental agility for the status symbols of an affluent society which can increasingly afford to question its own materialistic values? Is it reasonable to work for that which is satisfying, then deny to others (with whom one must compete) the pleasures of enjoying oneself?

On the other hand, can men expect to enjoy themselves without the self respect that comes only — at least mainly — from work? Can man, the biological creature, deny the value of material possessions that contribute to his physical comfort and security as well as to his psychological identity?

These and other far-reaching questions must be asked again, and perhaps differently than in the past. As has often been repeated, man does not live by bread alone, nor does he live without it. Life is never simply a matter of taking "something in" for one's own subjective satisfaction or thrusting "something out" for one's own social protection; just as education and human development are never merely a matter of *unfolding* from within or being *informed* from without.

Ours is a time in which these two antithetical directions have come into bold, open conflict. To note that historically they have always competed for the minds and energies of men does not mitigate the responsibilities of all teacher educators to join in the struggle for reconciliation. The best hope lies in the rejection of naive traditional notions of the *inherent* goodness or evilness of man, and the *inevitable* struggle between his personal interests and desires, on the one hand, and the objective demands, expectations, and needs of the social order on the other. For "every 'solution' is personal, dwelling not entirely 'inside' . . . but in the interaction of the two" (Leonard, 1970).

Work as Dissent

Historically both education and work have been employed as social means to limit dissent, or, at best, to encourage acquiescence to and compliance with the established economic and political order. Public education in America for the masses was advocated, *not* as a democratic movement, *but* as a means of securing law and order and, therefore, property interests, and of preventing political and economic chaos. Vocational and industrial training were seen as the best preventives of labor unrest and uprisings, on the assumption (obviously ungrounded) that the untrained and ignorant, in contrast with the educated and skilled, were generally more passionately disposed to protest and violence.

Contrary to common understanding, therefore, it was not "a great zeal for the welfare of the plain people" which fostered the high regard for education in America, but a "zeal for the welfare of the employers of labor" and "for maintaining the political and social *status quo*" (Curti, 1959, p. 85).

This historical relationship between industry and education is currently reflected in the corporate endeavor to exploit a $50-billion-a-year education market and, at the same time, reap valuable publicity from visible efforts to solve social problems through vocational training programs (Carlson, 1970). But today's students and prospective employees are not as easily beguiled as their predecessors by the myth of "the American Dream" or promises of "pie in the sky by and by." Thus, most efforts of corporate industry to provide quick solutions to hard problems of urban and vocational education are met with suspicion and resentment, if not outright rejection.

Many dropouts and candidates for vocational education, all of whom are prospective employees, have already learned well the historical lesson that the rewards of labor are often disguised bribes to refrain from protest against the established order. Even teachers themselves are learning that their acceptance, promotion and success often depend on muting the critical, complying with the established, and innovating only with daring caution.

Vocational educators must learn how to combat the concept that work is antithetical to the democratic right and tradition of *orderly* dissent; consequently, democratic vocational education, genuinely directed toward the welfare of the future worker, will redefine the concept of work as a means to orderly dissent, not a prevention of it. Vocational educators must be prepared to persuade the future workers that the rewards of labor can be utilized to further, not silence, democratic aspirations. Work in and of itself will have to be defined as a form of rational dissent and legitimate protest. The quality of performance can speak against mediocrity. The preparation for and acceptance of jobs in businesses and trades operating under equal employment opportunity standards and just administrative practices can speak against discrimination and prejudice. Work in one industry or company, or another, will reject or support to some degree war, environmental waste, sexism, nationalism, racism, etc.

Realistically, no job will speak for everything a person believes in — or against everything he rejects and deplores, just as no social institution or vested interest group can do so. But teachers can be taught how to teach others the dissenting value of work. In their doing so, some industries, products, and technical processes will be threatened; thus, corporate-sponsored vocational education programs can be expected to increase. But the people will nevertheless ultimately realize that in an increasingly open and pluralized society *their* choice of the *kind* and *quality* of work stands for some things they value and cherish and against others they deplore.

Conflict between the Sexes

Through the years vocational teacher education has been especially valued by some as the last remaining bulwark against feminism in education. A few female home economics and business educators and their future sewing, cooking, and typing teachers have been begrudgingly permitted to grace the classroom and work-study areas where cigars, grease, and four-letter obscenities are far more common than feminine charms, gentleness, and sensitivity.

The days in which vocational education in general and vocational teacher education specifically can provide an escape into the realm of supermasculinity are gone forever. The women's liberation movement, if not the needs of and for vocational education without sexual discrimination, will see to this.

Of course, the most disappointed will be those who, like Max Rafferty (1968, p. 320), see our greatest mistake to have been the creation of education in "an essentially feminine image — gentle, noncombative, benevolent, maternal, a little fussy." Education, Rafferty claims, is not feminine, but masculine — "smashing aside dikes and levees like matchwood, and fulfilling its ancient role as the guardian and mentor of the human race." Education, as masculine, changes concepts, conquers ignorance, and fights evil.

It may come as a surprise to some that males do not have a monopoly on these educational goals. But all of us ought to know by now that the person or group which claims exclusive right to fight evil is bigoted and self-illusioned.

Vocational teacher education, in its unbalanced male sexism, now has the opportunity to break out of the trap which men have built for themselves over the centuries. It must take a more careful look at the roles of men as well as those of women and provide for a greater flexibility in both. Working men, too, have need to become tender, empathetic, sensitive, artistic, loving, nuturing, gentle. Only they have not been permitted to develop these so-called "feminine" qualities "by the norms of the society . . . set primarily by the males themselves in a kind of self-fulfilling process of entrapment" (Calderone, 1970). Never has there been a greater opportunity to bring vocational education and vocational educators out of the quagmire of the overemphasized, disproportionate "masculine" image — tough, aloof, impenetrable, rugged, and a little grimy.

Vocational teacher education now has the opportunity to provide for the mobility of both sexes across social limitations originally defined only as temporary conventionalities. Also, both men and women can be vocationally taught to assume from time to time different postures previously reserved for the other. Without denying the fundamental role of women in childbearing and care, teacher education can and must make provision for vocational education which allows men and women to adopt varying occupational roles without reference to sex.

It is not often that one group can liberate itself from its own entrapments and at the same time get credit for the liberation of others. Now is just such an opportune time for vocational teacher education.

Learning and Work in the Future — Their Implications for Vocational Education

Work in the Future?

The prophets of automatic progress and abundance are too easy to believe. Their message of increased leisure, less arduous, routine work, and, at the same time, more goods and services more readily available is just what we want to hear. Nevertheless, the conflict is clear between those who predict astonishing increases in affluence and improvements in the quality of work and life, on the one hand, and others who foresee a continuing economy based on scarcity.

One of the fundamental characteristics of the quality of American life is that we have always incorporated the optimistic, pragmatic outlook that over the long haul the economy will continue to develop and the quality of life, however defined, will improve. Perhaps these too abundant expectations, fed in part by myths of the American Dream and the false notion of unlimited natural resources, have led us to anticipate too much, too soon, with too little effort. Furthermore, our expectations, high to begin with, keep rising at an astounding rate. Contextual situations once accepted without question or quietly ignored in the past are now defined as researchable problems — conditions about which man can and therefore must do something — requiring vast amounts of our resources and energies. Again, novel conditions precipitated by urbanization, automation, the population and knowledge explosions, and rising democratic aspirations will place extraordinary demands on our ingenuity and resources to combat pollution, provide mass public transportation systems, rebuild urban cores, and extend health and education services. Thus, while our economy may not continue to be based on notions of scarcity, nonetheless in the future there will be more demands for an increasing array of goods and especially services.

There is clear evidence that automation, far from reducing jobs and thereby increasing unemployment as predicted, has actually created additional jobs and opportunities for employment, though of a different kind than in the past. Furthermore, those providing services have "increased by no less than 70 percent, from 28 million to nearly 48 million . . . since 1950" (Burck, 1970). Thus, in the immediate future "the scarcest of all resources will be manpower . . . . For a long time we'll probably have to work as hard as ever" (Burck, 1970).

If so, then vocational educators will also have to continue to work as hard as ever — even harder in light of changing work styles brought about by automation and shifts from the production of goods to the provision of services, both calling for occupational retreading if not continuous retraining. These general qualities of change also indicate that the preparation of vocational instructors, instead of becoming an antiquated vested interest, will play a much more vital role in education than ever before.

Even if shortages of all types of manpower were not in actuality to continue, it is reasonable to assume that increased demands for educated, employable persons will come about as a result of the "need" for new products and services created by the coalition of Madison Avenue and mass media. These demands already exist "in many skilled occupational fields such as police and fire science, environmental technology and the allied health professions" (Nixon, 1970, p. 29). Their variety and number can be expected to increase, calling for degrees of flexibility and relevance still to be attained by vocational educators and those who prepare them.

The Leisure of Work and the Work of Leisure

Contrary to earlier forecasts, large amounts of leisure time will not become a reality for most workers. In fact, the severe distinction traditionally made between work and leisure may deteriorate to some extent as the knowledge industry continues to grow and as more workers provide services and fewer produce goods. Indeed, the average work week in 1980 is expected to be 37.5 hours with three weeks vacation per year (Benson, 1966, p. 5). But this estimate is for the world of assembly-line manufacturing. There are no necessary reasons why increased leisure time should hold for the knowledge worker who is less tied to his materials and machines than the producer of goods. The producer may, therefore, extend his services into times and places not limited to work shifts and assembly lines.

Thus, the problem of using leisure time, that is, time free from work, may not become the monolithic hurdle which once was foreseen for vocational education. Still, the question remains open whether vocational teacher education can provide concepts of leisure which are not clock-time oriented, that is, not defined in terms of the absence of work. As long as leisure is viewed as free-time as opposed to work-time, negative attitudes toward work will be reinforced and the identification of the proper uses of leisure will remain a problem, no matter what the ratio of leisure to work time.

A fundamental challenge in the preparation of vocational educators is to help them reconceptualize leisure, perhaps to rediscover in part its classical view. In the ancient world, "work was understood as the absence of leisure rather than leisure being understood as the absence of work" (Green, 1968, p. 64). According to this concept, work is the negation of leisure, not the other way around as we often conceive of leisure as being freedom from work. For the Greeks there was no problem of leisure in the sense of filling time or finding an occupation for every moment. For them leisure was activity, but activity which was an end in itself, not requiring additional justification or purpose.

Perhaps the clue here for vocational education is to build into work those qualities of leisure which have intrinsic value — enthusiasm, warm personal interrelationships, freedom through skill and ability, and a cooperative adventuresomeness. Likewise, there are intrinsically valuable qualities of work that vocational teacher preparation can promote as a part of the worthy use of leisure — service to others, self-respect based on accomplishments, confidence through social and economic contributions, acceptance of others in an interdependent relationship, and the like. By integrating the finer qualities of each experience — work and leisure — into the other, neither need be viewed as the absence of — and therefore the antithesis of — the other. As the dichotomy of work and leisure dissipates, and the experiential qualities of each penetrate the other, both negative attitudes toward work and the problem of filling leisure time with worthwhile endeavors may be appreciably reduced.

Styles of Learning

Vocational teacher education should find ways to promote further the notion that not all need a four-year academic college education, and, therefore, not every high school student should spend his four-year secondary school career in a college preparatory curriculum. Furthermore, vocational education has a contribution to make to the college-bound high school student. Such students who include in their curriculum homemaking, industrial arts, business and other so-called "non-academic" studies, it has been shown, perform better in college than those who restrict themselves to larger doses of academic courses. Thus, " 'overskill' in preparing for college is counterproductive. Nonacademic courses may be more useful than additional academic courses in helping a student develop judgment, independent thought, vocational interest, creativity, and other qualities that produce success in college and, for that matter, in later life" (Sulkin, 1970).

Our society is work oriented, but the schools of our society, at whatever level, are generally not work oriented. In Western culture this has been true ever since Martianus Capella, in the late fourth century A.D., defined the limits of the medieval curriculum to include only those arts that were suitable for spiritual, intellectual, celestial beings, thereby excluding all studies related to material and mundane interests (Butts, 1955, p. 101). Much progress has been and is being made in alleviating this imbalance of practical social goals and academic educational objectives, but vocational teacher education can contribute further. The qualities of life are now, more than ever, conducive to this end. As noted, the severe distinction between work and leisure can be lessened, and "philosophical development has at least mitigated the denigration of the practical and the instrumental which has plagued vocational education through the years" (Willers, 1968).

The styles of learning — the cognitive, the affective, and the manipulative — are also being integrated. The trichotomy of man into mind, emotion, and body — and his functions into reasoning, feeling, and working, respectively — are medieval and mythical. The fact that contemporary scholars continue to use such categories as classifications of learning styles and objectives only emphasizes the human need to analyze and abstract in order to cope with a multiplicity of complex, interwoven experiences. The categories themselves do not define human nature, neither its limits nor its prospects, much less portray human encounters realistically.

It is an established psychological principle that men work best when they are also thinking, that is, reasoning out solutions to problems and *vice versa*. And we have recognizable feelings and interests about our work, its purposes and qualities, as well as about our leisure. Logicians and anthropologists alike now readily admit, contrary to earlier notions, that man is not by nature a "rational being," and that there are several ways, culturally defined, to think rationally and to behave reasonably. Educators, too, are slowly but surely giving up the false pedagogical notion that students can learn only when undisturbed by social realities and undistracted by subjective interests.

Advances such as these in the conceptualization of man, the nature of his social roles, and the styles of learning, provide vocational education with untapped resources for coping with the novelties, conflicts, and challenges of the Seventies. If man can be taught to think and work at the same time, then he can be taught to think about his work, to predict needs for new skills, to apply new ideas to production, to design new uses and qualities of leisure — especially so if he is taught to approach such problems rationally and objectively at the same time he is being taught technical information and manipulative skills.

Further, if man's feelings and sensitivities continue to become increasingly socially appropriate and acceptable, we will be more readily able to teach and willing to learn attitudes and values of tolerance, respect, appreciation, and gratitude toward work and our fellow workers.

But the vocational education directed exclusively to the development of manual skill, to the attainment of psycho-motor objectives, and to the use of manipulative styles of learning will fail in the Seventies, just as traditional liberal education has failed in the past because of its exclusive concern with the cognitive and the rational. Perhaps the most productive future for both liberal and vocational education will be a movement toward each other — through the affective domain of valuing, feeling, and needing where men express their most essential characteristics.

Violence in Our Land

In conclusion, let us return briefly to an earlier point on the quality of revolution in our land. Violence in the United States is nothing new, but our nation "is currently in one of its more violent periods, if not its most violent" (Levy, 1969, p. 65). Furthermore, "the current wave of campus confrontations is essentially an unprecedented phenomenon . . . ." (*To Establish Justice . . .* , 1969, p. 15). Until only recently, we as a people believed in the strong possibility of mobility — vertical and horizontal — *for the individual* who was willing to exercise self-discipline, initiative, and effort. In the Seventies, however, instead of thinking in terms of individual mobility from class to class, increasing numbers are exercising greater degrees of power to raise the share of material wealth available to the various classes.

The Supreme Court's one-man-one-vote rule will soon begin to shift political power from rural areas to the urban blacks. "If programs for urban redevelopment, job training, and Negro employment succeed, relations between the races may lose some of their tension" (The Seventies . . . , 1969). In other words, political developments toward equal economic opportunity may bear the fruits of social justice only to the degree that vocational education provides the means of cashing in on expanding civil rights.

Two other groups also reaching for more power are the unions and youth. It would be unrealistic to think that these, along with the blacks, will not to a significant degree come into conflict in their competition for power. The task may, therefore, very well fall to vocational educators to help develop guidelines for refereeing certain violent-prone struggles for power and prestige. To identify such viable influences and directions would require the recognition of two important matters: (1) vocational educators and each of these groups have strong, mutual interests, and (2) the ranks of competition overlap; blacks, youth, and unionized laborers are not mutually exclusive.

Vocational teacher education may respond to these three forces by promoting easier access for blacks to the craft unions. Also, since the age of the organization man has reached its zenith, vocational educators must be prepared to sell to disenchanted youth the world of business and industry which will be providing ever greater opportunities for individual creativity and initiative (The Seventies . . . , 1969).

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Chapter 3

Assumptions Underlying Preservice Programs for Beginning-Level Vocational Teachers

by Jerome Moss, Jr.

Introduction

This chapter has four major purposes:

First, it attempts to make explicit the kinds of things about which assumptions must be made in the design of preservice vocational teacher education programs.

Second, it proposes a specific set of assumptions which culminate in a description of the competencies to be developed by beginning-level vocational teachers.

Third, particular attention is given to examining the presumed advantages and limitations of the several major methods by which prospective teachers can acquire those competencies.

Fourth, and finally, recommendations are made concerning preferred methods for attaining the desired competency patterns.

The justification for attending to the teacher education process rests mainly on the premises that some teacher behaviors significantly affect student behaviors and that the relevant teacher behaviors can themselves be appreciably molded by formal educational intervention. Of course, the premises could be accepted and still not warrant concerted attention being paid to preservice teacher education (1) if the profession and the public were satisfied with beginning teacher performance or (2) if the number of new vocational teachers needed in the foreseeable future were negligible. But neither of these conditions is true. In fact, the current professional literature reflects great concern about and dissatisfaction with existing teacher education practices. And, unlike the situation which exists in most education fields (U.S. Department of Health, Education and Welfare, 1969), there is an urgent need to increase the supply of vocational teachers in the years immediately ahead. Consequently, after accepting (at least tentatively) the basic premise that there is a network of causal relationships between teacher education and vocational student behaviors, existing conditions in the field impel us to examine the assumptions upon which programs for the initial preparation of instructors rest.

The network of causal relationships between teacher education and student behaviors also provides the logical basis for the structure of this chapter. The assumed network is as follows:

1. Certain desirable student behaviors are prescribed by program objectives;
2. The attainment of these behavioral outcomes is dependent in part upon interactions between the student and a planned (educational) environment;
3. One of the roles of the teacher is to provide a portion of the proper environment through his or her behaviors (interacting directly or indirectly with the student);
4. Effective teacher behaviors are dependent upon the possession of a suitable pattern of competencies; and
5. The task of teacher education is to see that the teacher is equipped with the necessary pattern of competencies (including the ability to select and use them in appropriate contexts).

Teacher Roles

In light of evolving social, economic, and educational conditions and burgeoning technological opportunities, what parts will teachers play in the vocational education enterprise in the years immediately ahead? A description of their anticipated roles, in terms of major responsibilities, is a necessary prerequisite to specifying the kinds and categories of competencies beginning-level teachers will require.[1]

In this section, assumptions about factors which affect teacher roles are made. For example, assumptions are made concerning changes in the kinds of student outcomes desired, the educational environments to be provided, the personnel organization that will prevail, and the instructional tools that will be available. Then, the teacher roles which are likely to result from the impact of the evolving factors are briefly described with special attention to *entry-level* professional roles.

Assumptions About Factors Affecting Teacher Roles

Several authors have speculated about the changing face of education in general and vocational education in particular (Moss, 1969, and Advisory Council on Vocational Education, 1968).

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[1] A task analysis could be the next step after role delimitation and delineation if a detailed list of specific competencies were desired. For the purposes of this chapter, the task analysis step will be omitted since only "kinds and categories" of competencies, at a general descriptive level, are required.

The following is one such set of speculations consisting of a description of certain trends in vocational education which have great potential for influencing teacher roles. They are the first in a hierarchy of assumptions prerequisite to the subsequent consideration of teacher education programs.

1. Education about and for work will assume a more prominent place in the public education enterprise and will be effectively articulated with socially useful employment throughout the life of *each individual*. At the same time, vocational education outside the aegis of the public school will continue to grow — in business and industry, the military, and community agencies.
2. Despite the public's general awareness that the human resource is the nation's most important asset and that vocational education (at least for other peoples' children) is an investment in the development of that resource, increased competition for limited public funds will require vocational education to continually demonstrate the *efficiency of the investment*.
3. Public school vocational education will serve multiple purposes: (a) At developmental levels usually associated with the elementary grades, a primary role of vocational education will be to facilitate learning the *content of other subject areas,* to begin to shape appropriate *work habits and attitudes,* and to create *occupational awareness*. (b) The discipline orientation of curriculum development in secondary education will yield to a *coordinated* (if not integrated) *inter-disciplinary approach*. Vocational education will then be perceived by educators as a vehicle for coordinating and making relevant and functional, most of the formal education experiences of secondary school youth. It will also be recognized as an effective methodology for providing opportunities to use nonverbal learning aptitudes and to express figural and behavioral forms of creative problem-solving abilities in real and simulated work situations.[2] (c) Another special task of vocational education will be to acquaint all youth with a representative variety of occupations and their technical, psychological, sociological, and educational *requirements,* and to help students relate this information to their *self-concepts and the vocational decision-making process*. (d) For a considerable number of students during the upper-secondary years, and for almost all students at the post-secondary and adult level, the content of vocational education will be chosen to develop *specialized* occupational competencies.
4. There will be increased attention to the humanistic ends and concerns of vocational education: (a) As vocational education proves its social and economic worth, it will become the new cultural "melting

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[2] Of course, because of differences in learning styles and vocational objectives, students will be provided with varying amounts and kinds of occupational experiences.

pot," accepting larger numbers of people with more diverse values and cultures. Providing equal educational opportunity will demand greater focus upon the needs of each student. (b) The affective and conative outcomes of education — sensitivity and self-determinism among others — will claim immediate attention. (c) The goals of vocational education will be broadened to encompass certain nonwork role behaviors, such as culture-carrying and citizenship activities.

5. Curriculum development will become an increasingly complex process: (a) The development of curricula and curriculum materials will no longer be principally a local or even a state function. The major producers will be private industry and federally-supported centers, which will utilize teachers and other specialists in the developmental process. (b) The attainment of stipulated competencies within a flexible time frame will provide new parameters for curriculum development. (c) The rate of occupational change and worker mobility will continue to grow. In an attempt to enhance instructional efficiency, attention will focus upon methods for improving transfer capabilities. Attempts will also be made to design curriculums so as to teach first the elements common to as many occupations as possible; later, advanced experiences will be increasingly specialized. (d) The total resources of the community will be more fully utilized by public schools to provide planned learning experiences.
6. Advances in instructional technology and administrative techniques will permit a high degree of automated individualized instruction. Teachers will have at their disposal a large repertory of materials from which suitable learning packages can be selected for each student. A variety of devices will be available for appropriate presentations, and learning outcomes will be evaluated immediately in terms of prescribed goals.
7. While it is very likely that teachers, as individuals, will lose some of their autonomy in the classroom/laboratory, as a group they will assume increasing control over other aspects of educational policy and practice.

Assumptions About Teacher Roles

Given the kind of vocational education "scene" envisioned by the above trends, what roles will be performed by the teacher-players?

One implication for the future that emerges from the trends is agreed upon by several writers (Joyce, 1967; Lange, 1969; Moss, 1969). The changing nature of the school curriculum, greater attention to individualized instruction for a wider variety of student needs and values, improved technology, and the need to take advantage of available community resources all demand that teacher roles be differentiated and become more specialized. As Joyce (1967) perceives it:

> The 1950's and 1960's have been a time when the conception of staffing the schools with only one kind of person (the multipurpose classroom

> teacher) and only one kind of material (textbooks and trade books) have been replaced with the view of the school as a complex of man-machine systems in which teachers of many kinds work with techniques and lower order personnel of many qualities in a matrix of technological devices and instructional resources centers (p. 325).

Instructional teams, each consisting of personnel with varying kinds of and levels of competencies, will help guide students through stages of educational development. Teams will assess individual progress, diagnose learning problems, counsel, prescribe, and "orchestrate" learning experiences to take place both inside and outside of the school building to provide learning experiences that utilize individual, small group, and large group instructional modes. Teams will be used at each level from early childhood education through adult education.

While there are many possible models for forming teaching teams, it is likely that each team will include provision for (a) paraprofessional roles to provide technical and clerical assistance to professional personnel, (b) an intern role for the instructor-still-in-training, (c) a beginning or entry-level professional teacher role, and (d) at least two higher level roles of instructional personnel, such as staff teachers and master teachers. Teams will make it possible to recognize salary differentials among personnel based upon the competencies required for each role; they will encourage the establishment of an instructional career ladder; and they will permit appropriate use of part-time and temporary as well as career-oriented personnel.

With the presumption that instructional teams will consist of a hierarchy of differentiated roles, preservice education may be defined as the preparation needed to develop the basic competencies prerequisite to adequate performance in *each* of the instructional roles. This definition implies that preservice programs will be needed to prepare individuals for paraprofessional roles, beginning-level professional roles, and for each of two or more higher-level instructional roles.[3] Individuals will presumably enter the instructional team, after appropriate preservice preparation, at either the paraprofessional or the beginning-teacher levels. Then, after suitable experience and subsequent preservice education to develop the additional competencies needed for the next higher-level role, each person can begin to move up the instructional ladder. Paraprofessionals can become beginning-level teachers, beginning-level teachers can attain the next higher-level role, and so on.

Ideally, a discussion on preservice programs should describe programs for both the entering level paraprofessional and for the beginning-level teacher. These are the foundation upon which preservice and inservice programs for roles at other levels will probably be based. This discussion concentrates, however, on programs for the beginning-level teacher, for these represent the level at which teacher education institutions are now—and in the immediate future are likely to be—making their greatest investment of resources. Moreover, it seems likely that programs for beginning-level paraprofessionals and for beginning teachers will have far more similarities than differences.

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[3] In addition to roles on the instructional team in the vocational program, preservice experiences should be designed to develop specialized competencies for such roles as teacher educator, administrator, coordinator, researcher-evaluator, and curriculum developer.

The primary function of the beginning-level role is envisioned as student behavior modification as prescribed by other members of the team. This function typically involves direct contact with students, individually or in small or large groups. Personnel in the higher-level roles will have principal responsibility for the diagnosis, prescription, and evaluation of student learning. To further distinguish beginning teachers from the higher level members of the team, the former will seldom have chief responsibility for students with special learning difficulties, nor will they often engage in individual guidance, coordination (job and community), placement, planning and supervising instruction, or other specialized activities without close supervision.

In addition to the functions assigned to the role in the team hierarchy, the part to be played by beginning-level vocational instructors is also greatly influenced by the particular educational mission of the team. And, as indicated in the list of assumed trends, vocational education will adopt multiple purposes. For example, when the major mission of vocational education is to develop specialized occupational competencies in self-selected groups of students, a team might be assigned responsibility for providing all the instruction needed for a "cluster" of occupations, including the basic common elements in the cluster as well as the most advanced instruction for specific occupations within the cluster. On the other hand, if the vocational mission is to provide occupational orientation experiences to a nonselect group of students, a team might be assigned responsibility for properly acquainting all youth with an occupational field or even with all occupational fields. Thus, the vocational mission, as it determines instructional content and methodology, also shapes the role of the teacher and the competencies he or she will require.

There is one further important distinction that should be made within the beginning-level instructional role. The importance of maintaining teachers with a high degree of competence in rapidly changing occupational specialties and the equally important need for teachers with a high degree of pedagogical expertise and professional commitment argue for the creation of two beginning-level role categories, especially for vocational programs which purport to develop specialized occupational skills. One category would be for part-time and temporary (noncareer) personnel while the other category would require career teachers.

Noncareer personnel might be used whenever the instructional role requires either recent, specialized occupational competencies or when occupational "models" or "interpreters" between the team and special student groups are needed. Such persons, who are occupational specialists, can be "borrowed" from their employers for one or two years for one or more of these purposes, and then returned. In this way, the content of occupational specialties can be kept current, career personnel can be kept informed about occupational innovations, the school program can maintain currency in the specialties it offers, and school-industry relations should be strengthened. But noncareer beginning-level teachers will need a great deal of assistance with pedagogical problems. This will be part of the task of advanced-level career teachers.

Beginning-level career personnel, on the other hand, will be utilized in instructional situations to teach "about" occupations or to provide the "related" or basic, common elements within clusters of occupations. These teachers will also be needed to help serve the affective, conative ends of vocational education and to assist career teachers from other subject areas to make occupational applications of their content. The competencies required for these tasks change relatively slowly; they provide the base required for attaining the higher-level roles on the team, and for creating a core of professional teachers and other vocational education leaders.

Table 3-1

Vocational-Technical Teacher Roles

Principal Vocational Mission	**Paraprofessional**	**Professional**		
	(Noninstructional Technicians, Clerks, Aides, and Members of Call Staff)	**Beginning-Level Instructors**		**(Advanced-Level Instructors)**
		Non-career	**Career**	
Facilitate Learning Other Subject Areas Shape Work Habits and Attitudes Create Occupational Awareness		▨	▨	
Provide Occupational Orientation - Exploration Improve Vocational Decision-Making Skills Facilitate Learning Other Subject Areas		▨	▨	
Develop Special Occupational Competencies		▨	▨	

▨ Roles of concern in the chapter.

Table 3-1 summarizes the foregoing discussion of teacher roles. The columns of the table represent differences in function (and level) within the teaching team, and the rows indicate the differences in role related to variations in vocational mission. The distinction between career and noncareer personnel at the beginning-level is also indicated. Instructional teams consisting of paraprofessionals, beginning-level teachers (both noncareer and career), and advanced-level instructors will be formed to perform each of the vocational missions with certain group(s) of students. The duties of each team member, and therefore the competencies needed, are governed by his or her function and level on the team and the team's mission. Different preservice programs are therefore theoretically needed to prepare individuals to perform the roles created by each combination of function on the team and team mission (each cell in Table 3-1). In practice, however, the preparation needed for some of the roles may be quite similar. The shaded cells indicate the roles which are relevant to this discussion.

After appropriate preservice education, individuals may become paraprofessionals (teacher aides, clerks, etc.); they then may move to the beginning-level teacher and to the more advanced levels after completing the pertinent preservice programs. Persons with the proper preservice preparation may also enter the team directly at the beginning-level in either the noncareer or career categories. Most who enter as noncareer teachers will be employed on teams whose vocational mission is to develop special occupational competencies in their students, and will leave teaching to return to business or industry after one or two years. Some of these occupational specialists, however, may elect to remain in teaching and may do so by acquiring the additional competencies required of beginning-level career teachers. It is likely that most career teachers will enter the instructional team directly at the beginning-level after completing the appropriate preservice program. Beginning-level career teachers will then typically qualify themselves for the advanced-level roles in the team hierarchy.

It should be noted that no distinction has been made among the roles of instructors in the various vocational fields. No doubt differences in the *specific* competencies associated with occupational differences exist, just as they do within the several fields. But many of the other specific competencies related to the instructional process are undoubtedly very similar, if not the same. These similarities and differences are important in determining the organizational arrangements for providing preservice teacher education. However, for the purposes of this discussion it is not necessary to deal with *specific* competencies, only with kinds and categories of competence. At this level of generality, significant differences do not exist among fields which adopt similar educational purposes. Homemaking education, therefore, is not excepted from the above role descriptions. The preparation of housewives requires the development of specialized occupational competencies, and homemaking is certainly as productive and socially useful as any wage-earning occupation.

On the other hand, it is possible that agencies other than the public school — Department of Labor, the military, private business, and industry — may elect to adopt different or more limited objectives for their vocational training programs. In that event, the instructor's role and competencies prescribed in this discussion may not be entirely suitable.

Teacher Competencies

If the general description of vocational teacher roles, particularly the beginning-level roles, presented in the preceding section is assumed to be a reasonably accurate forecast of the nature of the forthcoming responsibilities of teachers, what categories and kinds of competencies should they possess?

Present certification requirements provide no realistic guide. Not only are they not keyed to predicted role expectations, but the requirements are so varied within and between vocational fields that they flaunt our indecision (Meffley, 1967; Richland and Rosove, 1967). In some instances, certification standards are so low or so irrelevant as to probably harm teachers and students and severely limit class activity.

Consequently, a theoretical set of categories and kinds of desirable competencies have been developed which are suitable for the predictable role expectations of all beginning-level vocational teachers. Following their delineation, assumptions are made concerning appropriate relative emphases among categories of competence (competency patterns) for each kind of beginning-level role.

Assumptions About Kinds of Teacher Competence

Table 3-2

Categories of Competencies for Beginning-Level Vocational Teachers

I. PROFESSIONAL		II. SUBJECT MATTER		
A. Training Skills	B. Understandings	A. Occupational Area		B. Understandings
		1. Technical Skills	2. Appreciations	

III. KNOWLEDGE ACQUISITION		IV. GENERAL		V. PERSONAL CHARACTERISTICS
A. Skills	B. Understandings	A. Skills and Understandings	B. Appreciations	

Table 3-2 presents five major categories (and their subcategories) of competencies. Some competence is needed in each category by all beginning-level vocational teachers, although it is recognized that the relative amounts in each will vary in accordance with the career orientation of the teacher and the nature of the vocational mission. An explanation of the categories follows:

The "Professional" category includes those competencies which distinguish teachers from persons in other occupations.

The "Training Skills" subcategory of professional consists of those special skills which professional teachers exhibit in their practice. They are an array of instructional techniques and procedures which teachers employ to effect behavior modifications in their students. As suggested by Smith, *et al.* (1969), training skills might include (a) diagnosing student needs and learning problems, (b) prescribing instructional modes and materials, (c) stimulating students, (d) applying reinforcement schedules, (e) structuring and restructuring knowledge, (f) utilizing instructional technology to attain cognitive, affective, and psychomotor outcomes, (g) communicating in small and large groups and with individuals, (h) negotiating interpersonal relations with students, parents, and other persons in the community, (i) functioning within a teaching team, and (j) managing a shop/laboratory.

The need for placing greater emphasis upon training skills has been dramatically underlined by Popham (1968), who found *no* systematic differences between a group of vocational teachers and a group of non-teachers in their ability to modify student behavior in accordance with prespecified instructional objectives. As Gordon (1969) put it:

> As teachers we have seldom been called upon to really teach. Too many of us confuse mere pedantry with teaching. The former requires that we know a good bit about our instructional material. The latter requires that we know a great deal about our students and even more about how we use ourselves to make our knowledge and experience a part of the effective adaptive repertoire of those persons we teach . . . (p. 103-104).

The increasing range of students that vocational education will be called upon to serve (especially those with special needs) calls for a greater degree of pedagogical skills than ever before.

The professional "Understandings" subcategory gives recognition to the fact that there are underlying reasons for the existence of public education, vocational education, and the teaching profession and that these reasons should be understood by all vocational teachers, mainly for their interpretive value. The understandings in this subcategory might therefore include (a) role and function of education and vocational education, (b) organizational structure of education and vocational education, and (c) governance of the profession and professional role expectations.

Category II, "Subject Matter," deals with the substance to be taught. It is the special instructional material that distinguishes among teachers in different fields. There is no doubt that subject matter competencies are important. The critical problem is to identify them with sufficient validity and precision to distinguish between acceptable and unacceptable competence, and to provide specific goals for use in curriculum development and for teacher selection (Moss, 1967).

The subcategory of "Occupational Area" refers to those competencies directly associated with a particular occupation, occupational cluster, or occupational field(s) about which the instructor is to teach; it serves to distinguish among vocational teachers.

"Technical Skills" of the occupational area consist of the cognitive and psychomotor abilities called for by the occupational area to be taught. The depth and breadth of the skills required is dependent upon the purposes of the vocational program and the particular teacher's role. For example, in some cases journeymen or masters' level competence in a particular occupation and familiarity with directly related occupations is necessary. In other roles and/or programs "advanced apprentice" level competencies in an occupational cluster and beginning-level skills in related clusters may be desirable. Finally, in some instances "beginning apprentice" level skills in a wide variety of occupational clusters may be appropriate.

"Appreciations" refer to an awareness of the conditions associated with the psycho-social work environment of the relevant occupational area. They consist of recognitions of the mores and standards under which the technical skills are applied, and a sensitivity to the habits, attitudes, and values possessed by typical practitioners. Since more young workers leave or lose jobs because of dissatisfaction with the work environment, or an inability to adjust properly to it, than because of reasons associated with technical skills, teachers must understand and appreciate this environment in order to present a realistic perception of it to their students.

Subject matter "Understandings" extend and formalize appreciations about a particular occupational area to the broader contexts of "work" and "occupations." Vocational teachers should be aware of and understand "the problems of organizing, directing, controlling, and evaluating the efforts of men and technology at work" (Stadt and Kenneke, 1970). They should know about such topics as (a) occupational and industrial classification systems, (b) vocational development and adjustment theories, (c) methods of acquiring and disseminating occupational information, (d) the composition of the labor force, (e) the systems by which man and his technology interact and their social and economic implications, (f) work roles and role relationships within organizational settings, and (g) the functions of manpower and economic policy. These kinds of knowledge have important interpretive and applicative uses for the teacher as he or she tries to acquaint students with the "world of work" or particular aspects of it.

The significance of competency category III, "Knowledge Acquisition," is convincingly argued by Cottrell (1967):

> Understandably, the transmission of knowledge through education has come to be a very different problem than it was fifty years ago . . . The only promising approach to the problem would seem to be to concentrate

> upon how to learn . . . Our faith must rest in the selection of problem areas in which learning how to inquire will presumably result in a reasonably generalized ability to cope with new problem areas whose context cannot yet even be imagined and whose motivation for exploration cannot be predicted. Thus, the teacher himself must be taught to be an inquirer and to share his own inquiries with young people who will be touched by the contagion which emanates from his efforts (p. 233).

Thus, mainly through appropriate instructional methodologies, teacher education preparatory programs should develop the knowledge acquisition "Skills" of (a) analyzing, synthesizing, and communicating the ideas of others, and (b) acquiring and communicating new knowledge through self-directed application of the scientific method. The concomitant "Understandings" will be those of the basic elements in the scientific method.

The competence category of "General" consists of skills, understandings, and appreciations that provide a foundation for the substance and art of teaching, while simultaneously developing the prospective teacher as a person. General "Skills and Understandings" in mathematics, communications, and the sciences help create the conceptual frame and develop the skills and information prerequisite to (a) applied studies in both the subject matter and professional competency categories, and to (b) showing their occupational applications to other teachers as well as future students.

General "Appreciations" are important for living and working in a multicultural world. The development of a more mature self-concept, a social conscience, sensitivity to and acceptance of the values of others, and aesthetic appreciations (through clinical experiences and study of selected topics from the humanities and the arts) will enhance the prospective teacher's ability to relate, to communicate, and to use himself or herself freely in human interactions with moral purpose. These abilities will grow in importance as the diversity of students who take advantage of vocational education opportunities grows and as the concern of vocational educators for humanistic outcomes sharpens.

When the term "competency" is interpreted broadly, it must include the fifth major category of "Personal Characteristics." The best predictor of teacher effectiveness reported in the literature thus far appears to be academic achievement in the teacher education program (Crabtree, 1965; Dotson, 1963; Gritzmacher, 1963; Monts, 1963) which, in turn, is positively related to verbal intelligence (Levin, 1970). Unfortunately, despite persistent efforts, there has been little success in identifying other personal characteristics which are related to effectiveness. The research which has investigated teacher satisfaction, however, has yielded much more promising results. Several studies have shown a positive relationship between measures of the individual's need-value-interest system and satisfaction in the teacher education program or on-the-job (Chadderton, *et al.*, 1966; Gaskill, 1965; Messman, 1963; Nelson, H. F., 1962; Nelson, R. A., 1964). Considering the number of prospective teachers who voluntarily leave training programs before completion, and the number who never enter the profession or who leave it prematurely, this evidence is extremely important. Thus, regardless of whether the development of desirable personal characteristics is considered a viable goal of the teacher preparation program or whether they are a part of the selection criteria for those programs, they cannot be ignored in the teacher education process.

Finally, with respect to the relative importance of major categories of competencies, the imperatives for beginning-level vocational teachers are professional training skills and competence in the subject matter occupational area to be taught. These are essential to the performance of immediate and basic classroom/laboratory instructional tasks.

Many teacher educators will be quick to note that several kinds of competencies which current preparatory programs attempt to develop are conspicuous by their absence from the foregoing description. Some of these competencies are associated with functions assigned to the higher-level roles of the team, and have therefore been reserved for development by subsequent preservice or inservice programs. These functions include individual and group guidance and counseling, maintaining school-community relations, coordination and placement, planning and managing the instructional situation, and supervision of instruction. Also, the functions of designing curriculums and preparing instructional materials have not been mentioned since they may no longer be such an important part of each team's responsibilities. This delimitation of functions permits greater concentration on developing the basic instructional competencies of beginning-level teachers.

Other competencies whose development should be delayed until after the beginning-level instructor gains teaching experience are those that build upon the "General" competencies previously noted and are primarily valuable to teachers for their interpretive and prescriptive uses. These competencies provide conceptual frames for making the teacher's tasks and problems more meaningful, and supply guidelines for helping the teacher make the many value decisions required of him or her. They are typically gained from systematic study of the scientific and humanistic inquiries into education and vocational education (Broudy, 1967), such as theories of learning, history, and philosophy of education, and the psychology of particular age groups or other special or atypical groups of students.

Assumptions About Variations in Competency Patterns

One variation in the competency pattern desired of beginning-level teachers is associated with vocational mission. As has already been pointed out, the relative mix of depth and breadth of the teacher's occupational area competence is a function of whether his team has responsibility for developing specialized occupational skills, providing occupational orientation and exploration, or facilitating learning other subject areas. The greater the skill depth and degree of specialization to be developed by the student, the greater the teacher's depth of skill needs to be.

A second variation in desired competency pattern is called for by the creation of separate career and noncareer (temporary) beginning-level roles, especially in vocational programs designed to develop specialized occupational skills. These programs have need for teachers with a high degree of specialized up-to-date occupational competence, but also for maximum curriculum and staff flexibility in order to maintain currency in light of occupational change. In some cases vocational programs also need "models" and "interpreters" who can speak the language, command the respect, and sustain the involvement of special groups of students. Some individuals have this capability as the result of life experiences rather than formal education. Both these kinds of staffing needs argue for the legitimacy of instructional roles for persons with less than a career-long commitment to teaching. Because of the demands of their special roles, noncareer personnel will ordinarily need competency patterns with greatest strength, and specialized depth, in the occupational area.

On the other hand, staffing needs also call for beginning-level teachers who are skilled at pedagogy — teachers who can utilize the available instructional technology, whose concerns and values are "student-oriented," who can engineer behavioral change, and who will provide the core of professionals upon whom vocational education's future must depend. Such career personnel need a broader subject matter base and a higher degree of professional, general and knowledge acquisition competencies than do temporary and/or part-time (noncareer) personnel.

Criteria for Assessing Methods of Acquiring Competencies

The foregoing sections have attempted to outline the "target" for certain preservice vocational teacher education programs by making explicit a series of interrelated assumptions concerning (a) the anticipated vocational education setting and mission, (b) teacher roles as defined by team functions and program purposes, (c) the delimitation of those roles to beginning-level teachers who are either career or noncareer oriented, (d) a description of the kinds of competencies desired for beginning-level teachers, and (e) recognition of the variation in the relative emphasis of the kinds of competencies needed by the several beginning-level teacher roles.

Subsequent sections of this discussion focus primarily upon the advantages and limitations of various methods for attaining the desired beginning-level teacher competencies. But first, this brief section suggests three criteria by which the various means of acquiring the competencies demanded by each of the beginning-level roles may be assessed.

First, how "effective" is the means, or method, in terms of developing the kinds and level of competence required, and in creating the capacity for future growth?

Second, how "costly" is the method for (a) the prospective teacher, in terms of time and expenditures for overall preparation, as well as time and expenditures after entering the teacher preparation program; and (b) the public, in terms of time and expenditures for teacher education?

Third, how "productive" is the method in terms of its capability to produce the flow of qualified teachers in accord with the numbers required?

Acquiring Subject Matter Competencies

As Evans (1970) has suggested, there are four kinds of methods by which beginning-level teachers can acquire subject matter competencies. These methods can be conceptualized and depicted in the two by two table shown in Table 3-3. Illustrative means are shown in each cell.

Table 3-3

Methods for Acquiring Subject Matter Competencies

Place of Learning	Learner Orientation	
	As a worker or prospective worker	As a prospective teacher
In the Work Setting	On-the-job training	Cooperative education programs
In the School Setting	Vocational or other degree programs	Teacher education programs

One dimension of the figure is "learner orientation." As subject matter competencies are being acquired, does the learner intend to apply them to the practice of the occupation or does he or she principally intend to communicate them to others at some time in the future? What is the learning set? The second dimension refers to "place of learning." Are the subject matter competencies attained in a work (production) setting or in a school (planned learning) setting? What is the instructional environment in which the prospective teacher learns?

Since this method of classification appears to be inclusive, convenient, and potentially meaningful, it is used to structure and order this section of the discussion. The purpose of the section is to examine the actual and assumed advantages and limitations of means *within each cell* for developing the subject matter competencies desired for beginning-level teacher roles; distinctions will be made where necessary to allow for variations between noncareer and career teachers as well as among vocational missions.

As a Worker in the Work Setting

After studying the methods employed by European countries to prepare vocational teachers, the International Vocational Training Information and Research Centre (1964) reported the following:

> One group of countries places particular emphasis on recruiting vocational teachers who have acquired their vocational skill through long experience in employment. Here, the teachers are normally recruited at a comparatively advanced age — 30 years or over. The principal selection criterion is that the successful candidate should have proved his ability for skilled work in his trade or occupation; his general education background and scholastic achievements are taken into account only in a secondary capacity (p. 4).

That description fits perfectly the current situation in this country in trade and industrial education, and, to a large extent, in technical education. It is used in Europe, and here, where the vocational mission emphasizes "hands on" activities for the development of highly specialized occupational skills.

The history of trade and industrial education (Barlow, 1967) reveals that the principal concern of early leaders was to provide "realistic" trade training. They were acting under the stimulus of social pressure to provide occupational specialization to selected students in order to meet the immediate needs of the labor force, and they were reacting to the inadequacies of the "general" curriculum. The occupations with which they were concerned were relatively stable and the skills required were primarily manipulative. Since "No one can successfully induct others into an experience he has never had himself" (National Society for the Promotion of Industrial Education, 1914, p. 24), the principal need was for teachers who could serve as occupational *models*. In 1918, the Federal Board for Vocational Education reaffirmed that position by stating that the teacher need not be considered a "professional pedagogue" or qualify as a professional teacher, only that he can "teach his trade to beginners." Supporting, or even requiring, this point of view was the fact that institutions of higher education (including normal schools), did not at that time have the faculty, facilities or curricula needed to provide appropriate formal education experiences in certain occupations to prospective teachers — even if they could have been persuaded that courses in blue collar occupations, for example, belonged in college. Consequently, the obvious means of recruiting teachers was directly from the occupation to be taught.

What are the advantages and limitations of this means of acquiring subject matter competencies under current conditions for noncareer (temporary or part-time occupational specialists) and career-oriented personnel in beginning-level teaching roles?

Noncareer personnel: The instructor's competence has face validity for the student when the student knows the instructor has actually earned his livelihood in the occupation being taught; it also instills confidence in the relevance of the content being taught. But although a kind of minimum competence may reasonably be assured as the result of a satisfactory employment record, years of experience do not insure high technical competence. Jones (1967) found that student gains in both verbal and manual skills in short-term arc welding, small engine, and gas engine and maintenance courses were *not* related to years of trade experience of the teacher, but that gains were positively correlated with the teacher's subject knowledge as measured by special pencil and paper tests. Further, he reported that years of trade experience did not correlate with subject knowledge, although the teacher's educational level did. Impellitteri (1965) found no linear or curvilinear relationships between number of years of occupational experience and scores on written and performance tests based on over seven hundred persons who took trade competency examinations in fifty-nine occupations over a twenty-year period. (The validity of the tests was assumed.) It would appear that the technical skills of the teacher are indeed important, that years of occupational experience do not necessarily insure high amounts of those skills, that there is need for a better measure of teacher technical competence, and that such competence may possibly be obtained in ways other than working at the occupation.

The problem is that we do not have generally accepted and valid measures of the technical competence of teachers. As early as 1919 a national conference was held to consider testing as a means of assessing technical competence (Barlow, 1967). Such an early interest only serves to heighten disappointment in the results of efforts to date. While many tests have been written over the years, their validity has never been satisfactorily proved and their use is extremely limited. No doubt reliable and valid instruments would go far toward gaining college credit for acquired technical competence and toward promoting reciprocal interstate certification arrangements. As it is, years of work experience remains the principal requirement for certification in many types of vocational education, but the great variation among states in the number of years required is a tacit acknowledgement of the questionable value of the measure.

In addition to being a means for acquiring technical skills, on-the-job experience is probably the *only* way to develop the "appreciations" (of mores, conditions of work, etc.) required of vocational teachers. Also, presuming he or she has had high job satisfaction, some reasonable amount of time working at the occupation can almost guarantee that the teacher will represent a realistic model of the workers in that occupation; he or she will possess not only the appreciations, but also a minimum amount of the personal characteristics and values that may be necessary to function "successfully" in the occupation. If society desires to perpetuate the values and personality traits characteristic of workers in the occupation, then it is important for the teacher as a model to possess them; but if these values and traits are not especially desirable, too much occupational experience can be harmful.

Certainly it is essential to recruit competent workmen as teachers if vocational programs for *new and emerging* occupations are to be taught. The schools appear to have been successful at this even though the best practitioners may not have been recruited due to comparatively low teaching salaries.

The subject matter "understandings" called for by beginning-level teaching roles consist, in part, of systematic knowledge about the broad "world of work." Such knowledge rarely comes from unplanned experiences gained at work. Rather, it requires formal study to build upon, structure, and extend personal experience.

While the above discussion relates to the effectiveness of on-the-job experience as a worker to develop subject matter technical skills, appreciations and understandings, it should also be noted that the cost of that method to the individual and the public is relatively low. The public bears no direct expense for this portion of the prospective teacher's preparation, and the individual earns an income while he is learning his occupation. The only excess public cost associated with the method is the relatively high wages usually commanded by workers who enter teaching as compared to other beginning-level instructors.

Trade and industrial workers, both career and noncareer, are typically recruited from the trades only when there are teaching jobs available. The teacher training period necessary is shortened because the worker is presumed to possess many of the critical subject matter competencies. Consequently, there are almost no unemployed trade and industrial teachers. By the same token, there is no identifiable pool of qualified trade and industrial teachers upon whom schools can draw. Consequently, there has been a regretable tendency to reduce certification requirements, both subject matter and professional, during periods of teacher demand. The higher the demand, the greater the reduction of requirements. The flow — the productivity of this particular method of teacher education — appears to be adequate for obtaining noncareer personnel, but there is some question as to whether it is satisfactory in the long run when applied to career personnel. If vocational educators could predict program growth rates accurately, and if adequate preservice and inservice education were available, this method might work well for career trade and industrial teachers.

Career personnel: People who acquire their technical skills as workers on-the-job learn to practice rather than to teach those skills. Often, this learning set results in a lack of recognition of the formal conceptual structure of the occupation — the structure which is so critical in determining what and how to teach.

The technical skills that are learned on-the-job are apt to be too highly specialized, even unique to a particular job, to be maximally useful in any vocational program other than those designed to prepare for that particular occupation. And these are the skills that are outdated most quickly, and which have minimum transfer value. For this reason they may not be optimal for exploratory vocational programs.

Leaving occupational practice to enter teaching on a permanent basis involves a redirection of career choice and life style. The individuals who make that choice are relatively mature and do so after considerable investment in their first career. It can be expected that the choice is not made lightly, and that it often stems from the individual's lack of self-fulfillment in his or her previous work, particularly in the realm of social service (Parks, 1965). These circumstances augur well for reasonable stability in their new profession. But the fact that these new entrants are older, often have families and other financial responsibilities, and probably never intended to attend college (and frequently are skeptical about the value of higher education) militates against their vertical mobility in the teaching profession.

Schill (1963) has shown that there was a significant positive correlation between amount of schooling taken before and taken after entry into teaching. Status studies by Minton (1968) in Maryland and Allen (1964) in California confirm that only 32-39% of trade and technical teachers possessed the bachelor's degree or higher. The probability of a worker from the less cognitively demanding occupations completing a college degree after entering teaching is particularly low. This tendency is especially restricting for career-oriented personnel and severely limits the leadership resources so urgently needed by the field.

Some teacher education institutions are beginning to award credit toward the baccalaureate for occupational competence and experience (Lauda, 1966). This reduces the time necessary for the worker-turned-teacher to complete a degree. But it is doubtful that the reduction will be sufficient to overcome the aforementioned obstacles and to increase appreciably the percent who attain degrees.

There is one final critical question concerning the effectiveness of career teachers acquiring their technical skills and occupational appreciations as workers on-the-job: Are the personal values acquired on-the-job those which are optimum for the career teacher role? Finch (1969) reported that tradesmen-turned-teachers tended to retain their worker-oriented personal and interpersonal values rather than to accept those possessed by most teachers. The behavioral implications are currently evident among trade and industrial teachers. They expect students to be carefully selected to fit the demands of a rigid curriculum pattern in order that their own perception of industrial requirements and standards can be met as efficiently as possible. Their values are middle class and they expect their students to exhibit middle class behaviors. Many teachers with this worker-orientation are finding it difficult to cope with the emerging student-oriented approach to vocational education, and to adapt to the need for providing all types of youth with occupational skills.

Although the public bears no direct cost when the prospective career teacher acquires his technical skills as a worker on-the-job, and the teacher himself earns a normal living during the process, learning on-the-job is not the quickest way for him to acquire the necessary skills for a growing number of occupations. The dictates of production rather than learning efficiency control the process. The nature and order of the experiences gained are largely determined by production requirements, and, instead of being taken off a task when he becomes proficient at it, the learner is more likely to be kept on the task in the interests of the employer. Certainly, informal, on-the-job training decreases in efficiency as the occupations to be learned increase in the amount of cognitive content they require.

Summary: For noncareer personnel, gaining technical skills and occupational appreciations as workers on-the-job is a perfectly acceptable, in some cases even an essential, method, particularly as techniques become available to assess accurately the degree of technical competencies which they possess, and provided the prospective teacher has the personal characteristics deemed suitable for an occupational model. The public and individual direct cost is low, and the flow of personnel is adequate as a *supplemental* system.

For career-oriented personnel, however, the method is considerably less valuable. The acquisition of technical skills and appreciations usually take longer than necessary; the skills are often too highly specialized to be maximally useful for several vocational education purposes; they are highly perishable, and have limited transfer value. Systematic knowledge about the work role in relation to technology, economics, and the labor force, so badly needed by career teachers, is very seldom gained through work experience only. And, by the time workers become teachers the probability of their vigorously pursuing further education has been reduced considerably, and their worker value-orientation may be too rigid, as well as inappropriate, for their instructional roles. Finally, the lack of an identifiable pool of qualified teachers leads to an unfortunate reduction in certification standards during periods of high teacher demand.

The Military Retiree as a Resource: Several recent studies (Bates, 1963; Disque, 1967; Hensel, 1967; Richland and Rosove, 1967) have called attention to retiring military personnel as a resource for potential teachers. Although many, if not most, of these men have attended school(s) sometime during their careers, most have also spent considerable time practicing their military occupations, they are therefore considered a special case of the group who learn subject matter skills on-the-job as workers.

The opportunity to recruit retiring military personnel who already possess relevant technical skills represents a potential public saving for the cost of teacher education (although the retirees represent a considerable public investment in the military). Despite the fact that no clear cut procedures currently exist for channeling them into civilian teaching, these retirees — who are typically no older than the average college faculty member — do form a clearly identifiable and potentially accessible pool of prospective beginning-level teachers. Many appear to be interested in civilian jobs as vocational teachers; many have already completed considerable formal education; many are apparently willing to obtain additional education in order to qualify for employment in public education.

There are, however, several characteristics possessed by a high proportion of retired military personnel which could militate against their widespread use, particularly as career teachers. First, in addition to a lack of understanding of the broader structure of the labor force and the economy, they frequently have little or no appreciation of the working conditions, mores, etc., of their counterpart civilian occupations. Second, and most important, many of their highly specialized technical skills are not directly applicable to civilian occupations; for military specialties are designed to serve military systems. Third, although many will have had teaching experience in the service, they are accustomed to a caste system, they rely on conforming behavior as a norm, and they are not at all accustomed to direct public scrutiny of their methods or their results.

As a Prospective Worker in the School Setting

> In the second group of (European) countries the training of vocational teachers is seen principally as a continuation of the vocational training system itself. Facilities are provided for those who have the required intellectual ability to continue their studies beyond the level reached by the majority of trainees at the end of their training (p. 5).

Thus does the International Vocational Training Information and Research Centre describe the "prospective worker in the school setting" method of providing subject matter competence for beginning-level teachers. For example, it is common in military technical schools to choose the best one or two graduates of a particular class to become teachers of the next two or three classes in that school. While these graduates were students they expected to leave the school and work in the occupation for which they were preparing. Their orientation is suddenly shifted from that of worker to that of teacher by the fact of their being chosen to remain in the school "pipeline," but in a different role. In this country, relatively little use has been made of the method in public schools; the vocational fields that appear to use it most frequently are health and technical education through the recruitment of nurses and recent engineering and technician graduates into teacher education programs. Private, for-profit technical schools occasionally use this method of securing teachers for many different types of courses.

The usefulness of this method for acquiring technical skills obviously depends upon a substructure of good vocational programs, particularly at the post-secondary level. Recent and anticipated growth in post-secondary vocational education in this country — in private and public schools and colleges — portends an increasing flow of well-trained graduates in a wide array of occupations. The method therefore presents an opportunity for teacher education that should not be dismissed without careful examination.

There are some disadvantages to learning the technical skills of a complex occupation with the learning set of a practitioner rather than as a prospective teacher: The way one organizes the skills for use may be quite different; there are ordinarily no opportunities to coordinate skill acquisition with methods of teaching; and the skills that are learned are typically too specialized to be of greatest value in orientation and other programs dealing with broad clusters of fields of occupations. These limitations are the same as those already noted for workers who learn on-the-job.

School learning, though, does offer some advantages not possessed by learning on-the-job. Time is used more efficiently when the major criteria for activities are learning effectiveness and efficiency rather than production and profit; many activities unique to specific jobs can be eliminated; the competencies required by the occupation are developed in a systematic fashion so that theory and principles are made specific and cognitive structure is formed in a way that is helpful for future transfer; and the learners will gain the same kind of experience that they will provide for their future students — they will have a teaching model.

A significant "Study of Field Experienced vs. Pipeline Instructors" (1969) was recently carried out by members of the Air Training Command. Using several different airman basic courses, they compared the relative effectiveness of teachers who had considerable field practice, "experienced," with persons who had been retained as instructors immediately after graduation from the same courses they taught, "pipeline." The supervisors of the teachers expressed a definite general preference for the "experienced" group, presumably because they could function more independently. But when the same supervisors objectively evaluated each individual instructor, their generalized preferences did *not* show up to any appreciable extent. More importantly, in terms of student performance (as measured by grades on standard examinations), the "pipeline" teachers were *better* able to help learners in the lecture-demonstration aspects of the training, while field experienced teachers helped students more in the instructional areas calling for an application of principles to equipment-oriented operational situations. The outcome of the study seems to support the assumed advantages and limitations of in-school and on-the-job methods of teaching teachers, and to confirm the desirability of utilizing personnel with both types of background (in career and noncareer roles) in ways which maximize the benefits of each.

Selecting appropriate teacher candidates from among graduates of vocational programs should be easier than selecting them from the work force, since more detailed and recent data are usually available on their technical competence, their academic aptitude, and other personal characteristics. Candidates selected from this source are less mature than persons from the occupation, but their voluntary attendance at a post-secondary institution is an indication of educational motivation. Barlow and Reinhart (1967) report that persons who enter teaching younger, with less work experience and more formal education, tend to obtain more additional education. Cook (1966) found that qualified agricultural education teachers who had been enrolled in agricultural programs before entering teacher education were more likely to actually enter teaching than those without that background.

The tendency to pursue further education may be increased by a slowly growing disposition on the part of teacher education institutions to grant credit toward the bachelor's degree for prior post-secondary vocational training. As early as 1962, Ramp reported that one institution had arranged to grant such credit. More recently another institution reported having followed suit (Storm, 1967) and to have experienced less than a 2% attrition rate in their teaching candidates from a program requiring seven quarters to complete after transfer (including two quarters in full-time employment and student teaching).

Two very real limitations usually associated with acquiring subject matter competencies in school as a prospective worker, previously implied but not explicitly stated, are lack of opportunity to gain occupational appreciations while in the program (through on-the-job experience) and to attain appreciations of the broader "world of work" through formal instruction (although the latter limitation may soon be overcome by the introduction of relevant "general-related" courses into many post-secondary vocational programs).

The "prospective worker in the school setting" method, when provided by publicly supported instructions, generates public costs for teacher education. Direct expenses of the student, as well as his foregone wages, constitute individual costs. Yet, the method may eventually become a popular mode for obtaining competence in all of the less-than-professional occupations; and as the resource of potential teachers grows, recruitment and selection problems could concurrently be reduced and the control over teacher flow improved.

Summary: The "as a prospective worker in the school setting" method for attaining specialized technical competencies holds promise for both career and noncareer roles, but especially for prospective career personnel. The efficient development of technical skills, the tendency of graduates to obtain additional education, the ability to build a resource pool of teachers, and the potential for improved selection are important advantages. Public and individual costs (though not unusual), and the typical lack of opportunity to gain either occupational appreciations by first-hand job experience or systematic understandings of the work role in an advanced technological society are current limitations.

In School as a Prospective Teacher

The most popular method for beginning-level teachers to gain the technical skills of the occupation and understandings of the work world is through in-school programs provided for them. In agricultural, distributive, homemaking, and office education the approach is to design four-year teacher education programs culminating in the baccalaureate. For career-oriented personnel the method has many advantages, but for noncareer persons it represents a very inefficient use of time. Comments in this section will therefore pertain exclusively to preservice preparation for beginning-level *career* roles.

The International Vocational Training Information and Research Centre (1964) portrays the method as follows:

> The third group of (European) countries makes little distinction between the recruitment of vocational teachers and the recruitment and training of teachers for general education. Candidates for vocational teacher training are selected among persons who leave general education at the university entrance level. The training itself takes place in special teacher training institutes or university level institutions, identical with or parallel to those which train teachers for general secondary education (p. 5).

The method has, thus far, worked very well for preparing agricultural and homemaking teachers. Both of these fields have realistically presumed that their teacher candidates possess first-hand experiences on the farm or in the home *before* entering the teacher education program. Further, they have presumed, again realistically, that the future students of their teachers-in-training would also have had concrete, relevant occupational experiences before entering the vocational program. Consequently, the agricultural and homemaking instructors did not really need to provide an occupational model for their students, as did teachers in the other vocational fields. Their task was not to create farmers and homemakers from "scratch" but to make *better* farmers and homemakers — to improve the practice of the occupation. The appropriate technical content to be included in agricultural and homemaking teacher preparation programs was therefore the *applied science* of farming and homemaking. Such codified, ordered, and organized knowledge — such academically respectable knowledge — already existed in schools of agriculture and home economics.

In the future, however, as preparations for off-farm, agriculturally related occupations and wage-earning homemaking-related occupations become more important, the traditional method of teacher preparation in these two fields will become less satisfactory. The wide variety of appropriate technical courses needed will be extremely expensive to install, even if they are academically acceptable to institutions of higher learning, and presumptions about the prior relevant occupational experience of prospective teachers and of the students they expect to teach will no longer be realistic.

Office education and distributive education have had somewhat different problems since they could not assume that their teachers-in-training (or the prospective teacher's future students) had previous appropriate work experience. But reasonably relevant technical content courses were already available in existing schools or colleges of commerce or business. Consequently, while some office and distributive education teachers gain their subject matter competencies on-the-job (as do trade and industrial teachers), most acquire them while enrolled in teacher education degree programs.

Work experience is typically required by states for vocational teacher certification in the office and distributive education fields. Teacher education programs for most distributive and many office teachers now include cooperative work experiences to help students satisfy this requirement.

Unfortunately, the continued availability of relevant occupationally specialized technical courses in teacher education institutions is in doubt. With the growth of community colleges, many four-year institutions have begun to deemphasize what they consider lower-division courses, and thus intensify the general problem of finding appropriate technical courses for prospective teachers in all the vocational fields. Schools of business in particular have begun to eliminate some of the most crucial technical skills courses for office and distributive education teachers. The gradual shift to upper division work could, in time, even alter the whole current four-year pattern of teacher education.

While courses *for* specialized occupational skill development are becoming more difficult to maintain as a part of teacher education programs, there is much greater likelihood that courses designed to teach *about* occupational clusters and fields will grow in number. They are more academically respectable and much less expensive to operate. They are also essential for the preparation of career vocational instructors who will teach "orientation and exploration" courses and who will help other instructors in academic fields make their content occupationally relevant.

Where appropriate technical courses are available and under the direct control of the teacher education program, a unique opportunity exists for integrating the development of technical skills and professional competencies. Where the courses are available in the institution, or by special arrangement at some nearby post-secondary school, but are not controlled by teacher educators, at least an opportunity exists to sequence courses in order to extract whatever benefit optimum sequencing provides. In any event, prospective teachers will learn their technical skills with the proper set, and will organize them with teaching effectiveness in mind. The longer program that results from combining subject matter and professional competency development under one program of teacher education enhances the opportunity to produce graduates with teacher-oriented values and career goals.

Longer programs also tend to require that prospective students be recruited directly from the ranks of recent high school graduates. The relatively high drop-out rate and number who graduate but fail to enter teaching are probably part of the price paid for the necessity of making a vocational choice that early. Prior experience in the occupation which the student is preparing to teach would probably help to reduce the attrition rate from teacher education programs. Whether it would increase the total number of teachers is unknown. Also unknown is the influence of high school level vocational courses on a decision to enter and complete vocational teacher education programs. Agriculture teachers in particular seem to feel that high school enrollment in agriculture courses is important.

Unlike the two other major means discussed so far for acquiring subject matter competencies, there is often a rich resource in labor economics, occupational psychology, and occupational sociology available in teacher preparation institutions. Experts (or existing courses) can be used to help develop understandings about man and his relationship to technology, the labor force, and the enterprise system.

Providing subject matter skills as part of teacher education programs (in school as a prospective teacher) has a direct public cost, and to the individual it has both a direct (tuition, etc.) and an indirect (foregone wages) cost. As already noted, the public cost is apt to become excessive as the number of occupational specialties for which training is needed grows in relation to the number of teachers to be trained for each specialty.

The method produces a pool of identified, qualified potential career teachers. However, in light of the length of the training program, relatively accurate and long range predictions of teacher demand must be made in order to maintain a satisfactory balance between the size of the teacher pool and the demand for teachers.

Summary: It will be increasingly difficult for the "in school as a prospective teacher" method of acquiring subject matter skills to provide potential career-oriented teachers with adequate technical competencies in each of the growing array of occupational specialties called for by our expanding vocational system. The method will, however, remain the most important means by which technical skills suitable for teaching *about* clusters and fields of occupations are gained, and for acquiring systematic understandings about work and occupations in our society. By including the development of both subject matter and professional competencies within the same program, potential learning efficiencies are created, but the earlier vocational choice required by applicants to the program tends to increase the proportion of dropouts that can be expected. Finally, the increased length of the program necessitates longer range predictions of teacher demand in order to maintain reasonable teacher supply-demand balances.

In the Work Setting as a Prospective Teacher

As a method of acquiring subject matter competencies, learning "in the work setting as a prospective teacher" has limited but important applications. First, the method is limited, typically, to use by career personnel. It is generally uneconomical for the public (and the prospective teacher) to recruit temporary or part-time (noncareer) personnel who do not already possess adequate technical skills and occupational appreciations.

Second, the method is most frequently used in combination with other means of attaining subject matter competencies. Persons who have *already decided* to become teachers (and who may even be enrolled in teacher education programs) are rarely willing to devote the time needed to learn *all* of their technical occupational skills informally on-the-job. The method is therefore most frequently used in combination with other means of attaining subject matter competencies. Career-oriented individuals preparing for initial entry to the teaching profession, or teachers from other fields who wish to prepare for positions in vocational programs, use the method for supplementing their skills and gaining occupational appreciations through work experience.

As previously mentioned, most states require work experience for vocational teachers. The work experience, in addition to developing important appreciations about occupational mores, standards, and the psychosocial conditions of work, provides an opportunity for the prospective teacher to apply available technical skills in realistic situations, to learn some new skills, and to gain confidence in his or her own competence. To the extent that technical skills are acquired by work experience they reduce the need for public investment in space and equipment, and the prospective teacher earns while he learns.

Many teacher education institutions, however, do not make provision for students to obtain work experiences as a part of the formal program. If it is not expected or required for admission to the program, they let students accumulate the experience on their own through summer and/or part-time jobs. The nature of the experience may not be considered within the purview of the teacher education responsibility. The result is that the unplanned, unsupervised student experiences are not nearly as beneficial as they might be; except for the teaching perspective brought to the job by the student, such unplanned work has all the educational inefficiencies of other on-the-job experiences.

A viable alternative approach is the conduct of cooperative education programs for prospective career teachers. For example, the student may be expected to spend from one to two years of a five-year teacher education program in supervised work experience for which he receives college credits. Sometimes, students can work full-time during the day and attend evening classes. The planned and supervised work experiences that are provided have several potential benefits: (a) The kind and amount of job activities can be chosen to satisfy individual student requirements; they can provide highly specialized in-depth experiences or be drawn from a wide range of occupations, occupational clusters, or even occupational fields; (b) on-the-job experiences can be articulated with in-school experiences and analyzed to highlight their instructional significance; (c) firms can be chosen that utilize "advanced" practices to insure that future teachers will at least start their profession by being ahead of the current "average" in the field; and (d) the increased liaison with business and industry can only be profitable to teacher education programs and staffs.

Meyer (1967) has shown the results of a program which emphasized careful preparation for the job experience, included only eight days on each of two jobs, and was followed by a five-day intensive in-school analysis of the experience. From this program, distributive education teachers (a) learned a significant amount of technical (cognitive) content (measured by pre- and post-test results), (b) felt more confident about their own occupational abilities and the realism with which they perceived the work role, and (c) made changes in the content of the courses they offered.

Cooperative education programs, like unplanned work experiences, eliminate a considerable amount of public expense for space and facilities, and permit students to earn while they learn. But unlike the unplanned, unsupervised experiences they do require considerable staff time and effort and extra expense on the part of employing firms that adds to the cost of preparing teachers.

The productivity of cooperative programs depends in large measure upon the availability of suitable job training stations — which, in turn, is dependent upon geographic location, the state of the economy and the labor market, and the influence of other job controls (such as unions). These factors, singly and in combination, often restrict the extent to which cooperative programs can be implemented by teacher education institutions.

A further practical restriction on cooperative programs is their attractiveness to students. Many such programs require the student to spend more than four years to earn the bachelor's degree, but he is not compensated by a higher starting salary than other four-year degree teachers. Further, after four years, or while earning less than a "full" number of academic credits per quarter or semester, the male student's draft status might be precarious.

There is an obvious need to determine empirically the most efficient length and intensity of cooperative education experiences for the purposes they are presumed to serve.

Summary and Recommendations

This section has discussed presumed advantages and limitations of methods by which noncareer and career-oriented personnel can gain the subject matter competencies required for beginning-level teacher roles. The four methods covered were (a) as a worker in the work setting, (b) as a prospective worker in the school setting, (c) in school as a prospective teacher, and (d) in the work setting as a prospective teacher. Each method was examined in terms of its relative effectiveness, cost, and productivity for developing the technical skills, occupational appreciations, and understandings about the "world of work" needed by career and/or noncareer beginning instructors.

As a result of the analysis, the following recommendations seem appropriate:

1. In the interests of economy and productivity, only persons who already possess adequate specialized technical skills, occupational appreciations, and personal characteristics should be selected as noncareer (temporary and part-time) instructors.
2. The majority of noncareer teachers will have learned most of their subject matter competencies on-the-job, but an increasing proportion of the most desirable recruits should also have graduated from post-secondary vocational programs before acquiring job experience.
3. "In school as a prospective teacher" is the logical means for developing the technical competencies and understandings of the world of work needed by career teachers of those vocational programs which provide occupational orientation and exploration and which facilitate the learning of other subject areas. Teacher education programs for these purposes need to be created and should include a component of co-operative work experience.
4. Because of the growing difficulty in maintaining an adequate array of specialized technical courses, a gradually decreasing proportion of career-oriented instructors who will teach in vocational programs designed to develop specialized occupational skills should learn their subject matter inside teacher education institutions.
5. Similarly, because of the low probability of their obtaining sufficient additional education and the questionable usefulness of their value orientation, there should be a reduction in the proportion of tradesmen (who learned as workers on-the-job) who are recruited for career-teaching roles.

6. In their place, a greater number of graduates from post-secondary vocational programs should be carefully selected for admission to teacher education institutions, where they can be given an opportunity to gain occupational appreciations through cooperative education programs and to acquire understandings about the world of work through formal study.

Acquiring Professional Competencies

It is important for adequate beginning-level role performance that the preservice education of vocational teachers, particularly of career-oriented personnel, develop the professional training skills that will permit student behavior modification in accord with prespecified objectives. It is also highly desirable that career-personnel who enter the beginning-level role possess basic concepts about the function and organization of education, vocational education, and the teaching profession for their interpretive and prescriptive values. This section considers the assumed advantages and limitations of the major means by which prospective beginning-level teachers acquire those professional competencies.

One important characteristic which distinguishes among means for providing professional competencies is their academic "degree orientation." Some means are integral parts of teacher education programs designed to culminate in the bachelor's degree. Other means are not planned as part of a degree program, but are conceived originally as special experiences that terminate before attaining the degree. (This is not to say, however, that many of these experiences cannot contribute toward obtaining a degree at some later date.) The distinction seems important because of the many values degreed teachers have for vocational education. First, most efforts to professionalize vocational teaching are based upon formal training and uniform certification; this depends upon having degree programs and makes much less desirable those modes of preparation not culminating in a degree or not under the control of the profession. Second, if vocational education is to acquire the desired status and image, then teacher education must assure that the teachers themselves present an appropriate image; this would certainly call for teachers to have more education than their students. Third, especially in those rapidly increasing numbers of situations in which vocational teachers must work in close coordination with teachers from other fields, it is important for their morale and in the interests of the students that they be perceived as equals by all their co-workers. Fourth, the baccalaureate degree is an essential base for the acquisition of additional specialized training (provided at the graduate level); specialized training is needed to prepare for leadership roles on the teaching team and in curriculum development, research-evaluation, program coordination, and administration. Thus, the possession of a degree is extremely important for career-oriented personnel.

For the same reasons, associate degree programs should be considered useful, but only as an intermediate step, for persons who are preparing to be career teachers. For some noncareer teachers who later decide to make teaching their career, the path to the degree may be long and tortuous. The associate degree provides a rewarding sign of progress which may also be recognized (if the recipient has the necessary teaching experience) with increased responsibility on the teaching team. In fact, some teachers who have had experience in a noncareer role may have acquired sufficient relevant competencies to be promoted immediately beyond the beginning-level role by the time they complete the baccalaureate.

Unlike the acquisition of subject matter competencies, professional competencies almost invariably are acquired *after* the individual makes a tentative decision to prepare for teaching. But, as is the case with subject matter, professional competencies can be acquired in the work or in the school setting. The second characteristic which distinguishes among means for providing professional competencies is therefore "place of learning" (instructional setting). Some means utilize an on-the-teaching-job setting ("real" teaching-work situation). Other means employ a student-in-school setting (formal class or simulated situations), such as regular teacher education courses, seminars, micro-teaching laboratories, etc.

The two characteristics, degree orientation and place of learning, can be used as dimensions for classifying methods of providing for the development of professional competencies for beginning-level roles. Table 3-4 presents such a classification system as a two-by-two table, and shows illustrative means in each cell.

Table 3-4

Methods for Acquiring Professional Competencies

Degree Orientation	**Place of Learning**	
	In the Work Setting (On-the-Teaching-Job)	**In the School Setting (In Teacher Education Classes)**
Part of Degree Program	Orientation experiences, student teaching, internship	Teacher education courses
Not Ordinarily Part of Degree Program	Paraprofessional experiences	Clock-hour courses

The remainder of this section is organized to facilitate discussion of the advantages and disadvantages of the means in each of the four cells.

In the Work Setting as Part of a Degree Program

Orientation experiences, student teaching, and internships are methods employed as a part of teacher education degree programs which utilize the actual teaching job as the learning environment.

Orientation Experiences: These experiences ordinarily take place early in the degree program for the principal purpose of communicating an image of the teaching environment and the teacher's role to prospective teachers. The experiences enable learners to acquire occupational appreciations, to form concrete concepts upon which later formal training can build, and to test their self-image against the teacher's role. Multiple exposures, in a variety of agencies and to a diversity of student groups, obviously serve these purposes best. Prospective teachers can observe, perform paraprofessional tasks, and even undertake some home visitations during this period.

The time students lose from formal classes, the staff time, and the school cooperation needed to coordinate the orientation experiences are among the limitations of the method to be seriously considered. Some educators would also argue that "all prospective teachers have been students at one time or another, and already have an image of a school situation." With these limitations in mind, it would seem that if the orientation experiences are to offer any net advantage, then it must be because (a) the participants have been sensitized to the experience in advance and bring to it new perspectives and heightened awareness, (b) students are exposed to a wide range of realistic school situations, particularly to those which are not already a part of their personal experience, and (c) the experiences are actually used as a springboard for subsequent formal instruction.

Student Teaching: Student teaching is typically scheduled close to the end of the degree program. It is designed primarily as an opportunity for the prospective teacher to try out, under close supervision, his acquired professional and subject matter competencies in an actual teaching role (part- or full-time), ordinarily for a period of an academic quarter or semester. Teacher educators use the experience to evaluate the student's abilities (and often view it as the last opportunity to screen out undesirables), while students sometimes utilize it for self-elimination purposes and regularly use it as the last (or first and last) opportunity to get "real" preparation for a teaching job which appears frighteningly close in the future.

Most of the persons involved in student teaching recognize that important benefits do accrue from it, and students regularly rate it as more important than other teacher education experiences; but the consensus is that the experience is frequently "too little and too late" (Cappiello 1966; Chamberlain, 1963).

Internship: The presumed need for a longer period for "practice" teaching and the desirability of closer partnership arrangements among teacher education institutions, school systems, and other community educational agencies are beginning to find tangible expression in the internship. "The longer interface among these agencies will be facilitated by joint appointments of clinical professors, and, in turn, will permit a wider variety of practicum experiences for prospective and new teachers, and provide a means for continuous interchange of innovative ideas and practices" (Moss, 1969, p. 44).

Internships follow the acquisition of subject matter skills and some in-school instruction in professional training skills so that the intern can function initially at some minimum level of competence in the instructional role. By comparison with student teaching, the internship is considered a principal means for developing, as well as practicing, many professional training skills. The intern stays on the teaching job much longer than the student teacher, is considered a member of the teaching team, has more autonomy, and is paid a regular salary in proportion to his responsibilities (Gleason, *et al.*, 1967).

In addition to performing regular instructional duties under the close supervision of other team members, the intern is usually expected to attend small group sessions with other interns, and to engage in directed independent study. The sessions are held at locations close to the teaching job, at a time which does not interfere with their regular teaching assignment, and may be directed by clinical professors (master teachers who are on joint appointment with a school and the teacher education institution) or teacher educators assigned to the local areas.

There are a considerable number of assumed advantages to the internship method: (a) Prospective teachers earn while they learn and as they contribute to the teaching team; (b) sometimes, realistic occupational trials are provided earlier than usual in the degree program (before either the student or the public has invested in the complete program); (c) an opportunity is afforded to learn and to practice teaching skills under conditions presumably like those in which they will later be applied; (d) the content of the regular teacher education sessions (lead by the clinical professor) can emanate from the context of realistic teaching problems (and presumably can be generalized); and (e) the experience develops the concrete concepts helpful to subsequent formal instruction about the functions of education and vocational education and the professional teaching roles.

The presumed limitations of the internship method are, however, equally thought provoking and center around the inadvisability of using the method too early or as the sole or predominant means for developing teaching skills: (a) A considerable amount of time will be needed to develop an adequate number of teaching competencies *before* the intern should be turned loose in the classroom (even in a semi-autonomous position); (b) the amount of close supervision required by other team members is excessive in terms of using their skills most efficiently; (c) like all on-the-job learning, the means is inefficient because the demands of the job tend to control the learning sequence; (d) the problems with letting the intern's experiences give direction to formal group instruction are that the random order makes it difficult to build an effective generalizable conceptual structure, and the problems discussed by the group grow out of panic and a need to survive rather than a search for what teaching can and should be.

In the School Setting (Teacher Education Classes) as Part of a Degree Program

Laboratory Experiences: A small but growing number of teacher education institutions are incorporating in their degree programs blocks of time, continuing for more than the usual quarter or semester, devoted primarily to the development of teaching skills — the ability to modify student cognitive, affective, and psychomotor behaviors, including the ability to use self wisely in interactions with students. These laboratory experiences, which usually precede internships, can be thought of as consisting of a three-stage cycle. In the first stage, students are shown how to perform skills and are told the situational contexts in which they are appropriate; relevant theory may be integrated into this stage for its immediate usefulness in interpreting teacher-student interactions. The second and central stage provides for application and development of the skills by students in controlled and simulated situations, e.g., micro-teaching. The third stage involves analysis and reinterpretation (e.g., interaction analysis) of the application stage. The three-stage cycle is, of course, repeated until the skill can be performed adequately and its appropriate situational contexts are understood.

The method presumes that critical, generalizable pedagogical skills exist and can be identified, and that they can be taught, with their appropriate applications, to prospective teachers. Vocational educators, with their traditional occupational analysis approach and concern for teaching techniques, will probably find these assumptions palatable, though the vocational literature gives little evidence to date of laboratory method applications.

Lecture-Discussion Experiences: The professional block of the typical teacher education program provides little more than lecture-discussion experiences for the prospective instructor. As noted above, the laboratory method provides an alternative means for the development of training skills, but lecture-discussion (a verbal environment) is still probably most efficient for the development of the professional understandings that are used by beginning-level teachers for their interpretive and prescriptive values. These understandings, however, are best developed after the student has acquired some first-hand experiences in a vocational program (e.g., via internship) and is therefore able to formulate meaningful abstract concepts about such topics as the purposes of vocational education, the governance of the professions, and so forth.

Nondegree Experiences in the School Setting (Clock-Hour Courses)

Special preservice courses and workshops offer intensive acculturation experiences for highly motivated persons who are on the threshold of entering the noncareer teaching role. These short-term experiences can provide some orientation to the teaching role (as part of the team), and some guidelines for carrying out instructional responsibilities. But there is usually insufficient time to develop real teaching skills — only the opportunity to provide some models of them.

For years, however, just this approach has been commonly used in trade and industrial education. The prospective teacher, after twelve to twenty-four clock hours of instruction, has been shown the facilities, "issued" his students, and wished God-speed. Very little on-the-job supervision has usually been available. And, surprisingly, most teachers prepared in this manner have not turned out to be observably poorer teachers than those teachers who hold degrees.[4]

Such a comparison is not an endorsement of the special preservice course approach to teacher education, but an indictment of the effectiveness of some aspects of current degree programs! The fact remains, though, that noncareer teachers prepared in this fashion are probably marginally ready to be introduced to carefully supervised on-the-job experiences.

Many tactics have been employed to provide the special preservice experiences. For example, (a) itinerant teacher trainers travel to locations convenient to small groups of prospective teachers; (b) the prospective teachers are all assembled at one time in a central location; (c) the course is offered at regular intervals in a teacher training institution; or (d) responsibility for providing the experience is given to someone on the staff in each vocational school or system or local area.

The first three of these tactics usually depend upon assembling groups of prospective teachers after they have been employed, but before they actually begin to teach. This is often impossible because of last minute staff turnover, among other reasons, and so some individuals inevitably begin to teach before receiving the preservice course. The first three tactics also involve considerable expense for teacher-trainer and/or prospective teacher travel. The fourth tactic, giving responsibility for the preservice course to locally based personnel, holds a good deal of promise provided highly-trained teachers (e.g., master teachers, clinical professors) are available. All prospective teachers could then receive instruction when they need it, with a minimum of travel time and expense involved. Because the number of prospective teachers to be taught by any one staff member at any one time is reduced, this tactic does require more staff time than the other tactics; but it provides an excellent basis for establishing the close, continuing kind of supervisory relationship needed after the prospective teacher starts his job.

One way for locally-based personnel to offer preservice instruction more efficiently is to provide them with teaching-learning packages. In Minnesota (Wick, 1967), video tapes and correlated instructional materials, teaching guides, and tests were developed to provide twenty-four clock hours of preservice instruction (six hours of viewing and eighteen hours of discussion and testing). In a formative evaluation, test results and student and teacher judgments indicated that the package was acceptable and useful. After one revision, an experimental summative evaluation was conducted by Pratzner and Hanson (1969). The results showed that, when compared with the regular tactic of live teacher-trainer presentations and discussion, the film-discussion package produced "consistently and statistically superior performance on the criterion tests . . . and has probable economic and convenience advantages."

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[4] Teachers prepared by this method have typically been required to obtain additional teacher training courses within a year or two.

A quite different approach to preservice preparation has recently been described in the literature (Evans, 1971). In Alberta, Canada, skilled tradesmen were selected and paid to attend the university for a one-year teacher education program. One-quarter of their stipend came from the prospective employing school, and the remainder from the provincial and national governments. It should be noted that this is not the first time the method has been tried. In 1920, New York awarded twenty-five scholarships of $2000 each for persons with at least five years of trade experience to attend the vocational department of a state normal school for "systematic training as teachers" (Barlow, 1967).

Nondegree Experiences in the Work Setting

There are probably a great many circumstances under which prospective beginning-level teachers can acquire some professional competencies through preservice experiences in the teaching environment. Being a student, for example, could be construed as one of the circumstances. For the purposes of this discussion, however, only two kinds of circumstances (means) will be noted — experience as a paraprofessional and in an informal internship.

Paraprofessional Experience: If a career ladder is to be established within the instructional team, and teacher education programs designed to perfect sequentially the hierarchy of competencies required for most of the team roles, then preparation for and experience as a paraprofessional should be considered one kind of preparatory training for beginning-level professional teaching roles. The particular kinds of relevant competencies acquired by paraprofessionals certainly include orientation to the teaching role, knowledge about students, and techniques for negotiating interpersonal (student and staff) relationships. These deserve to be recognized by credit toward the bachelor's degree.

Informal Internship: Part of the normal responsibility of career personnel on the teaching team is to provide assistance to the noncareer teacher. But immediately after the noncareer teacher begins to teach (presumably after completing a formal preservice course of some kind), he or she is in need of special attention and assistance. Accordingly, the load of the new noncareer teacher should be lighter than normal in order to provide him or her with extra time for preparation and for analysis of personal performance, and even to meet with the regular interns assigned to that locale.

In light of the temporary nature of the noncareer teacher's assignment, there are obvious practical limitations upon the training time that should be invested per person, but duties of the noncareer teacher should always be defined so as to recognize their professional limitations and need for supervision. And, if and when temporary personnel decide to make a career of teaching and enter a degree program, credit should be given for the competencies attained through their prior formal training, informal internship, and experience.

Summary

In this section, the presumed advantages and limitations of four categories of methods by which beginning-level teachers acquire professional competencies were examined: (a) In the work (teaching) setting as part of a degree program, (b) in the school (teacher education) setting as part of a degree program, (c) nondegree experiences in the school setting, and (d) nondegree experiences in the work setting.

Recommendations

As a result of the examination, the following recommendations seem appropriate:

1. It is very important that career-oriented personnel acquire the bachelor's degree. Ordinarily, it should be completed as part of the preservice preparation of beginning-level teachers. Noncareer personnel, however, who later decide to make a career of teaching may acquire the degree while inservice; in some instances, the associate degree may prove useful as an intermediate goal.
2. Credit toward the baccalaureate should be given for professional (and for subject matter) competencies attained prior to entrance into the degree program. The maximum award should be limited only by the number of credits assigned to the development of each kind of competence in the design of the total teacher education program.
3. Degree programs should utilize the following components, in the sequence stated: (a) orientation experiences to create realistic images of the teaching environment and the teacher's role, (b) laboratory experiences to begin the development of training skills, (c) internships for further skill development in realistic but supervised conditions, and (d) lecture-discussions to formulate professional understandings. (These components will often overlap.)
4. Noncareer (temporary) teachers can most efficiently acquire their limited professional competencies through intensive preservice courses and close on-the-teaching-job supervision, both provided by the same locally-based master teachers (clinical professors).

Acquiring General and Knowledge Acquisition Competencies

The general competencies to be acquired include, first, skills and understandings drawn from the sciences, and from mathematics and the communications disciplines in order to (a) provide a foundation for subsequent study of subject matter and professional education applications, and (b) enable vocational teachers to communicate adequately with teachers from other fields about relevant occupational applications of nonvocational subject matter. The second kind of general competencies needed are appreciations of self, of others, of society, and of aesthetic qualities in order to be able to live and work successfully in a multicultural environment.

The first kind of competence can be acquired informally or by study in many different types of formal courses. Entrants to teacher education degree programs should always have the opportunity to demonstrate their attainment, either by test or by presenting evidence of successfully completing appropriate courses. Regardless of the method used, prospective career teachers should acquire the competencies before they complete the teacher education program.

The second kind of competencies is needed to relate and to communicate effectively with students from diverse cultural and socio-economic backgrounds with an awareness of social and moral consequences. Individuals who have demonstrated their ability to do this in relevant contexts should not be required to undertake further formal study designed to accomplish the same ends. To be realistic, though, the total number of persons with these competencies is not great, and the current crop of potential teachers appears not to be much more competent in this regard than were their predecessors. Consequently, teacher education degree programs should provide clinical experiences for prospective teachers in a variety of community activities and cultural settings in order to develop an awareness of and sensitivity to the values of others. Formal instruction in selected aspects of the humanities and the arts can then follow to build the necessary understandings and appreciations upon this experiential base. The appreciations acquired in this manner and the techniques of behavior modification learned in professional laboratory experiences and in internships should be mutually reinforcing as the "why and the how of it."

That some of these appreciations can be developed by general education experiences has received support from Finch (1969). He found that trade and industrial teachers who had accumulated more general education credits than their colleagues also had a more positive attitude toward teaching as measured by the Minnesota Teacher Attitude Inventory.

Finally, understandings and skills of knowledge acquisition refer to the prospective teacher's disposition and ability to learn independently. As thought of here, an adequate level of skill can be attained primarily as an important by-product of the process of acquiring other subject matter, professional and general competencies. With few exceptions, the development of knowledge acquisition competencies is not dependent upon the substantive nature of the course or experience, but upon the instructional method or process employed.

Recommendations and Implications

In order to examine the assumptions underlying preservice education for beginning-level vocational teachers, a logical analysis in four stages has been undertaken. First, selected educational and social trends which are likely to influence teacher responsibilities in the years immediately ahead were examined and teacher roles were identified. Second, beginning-level instructional roles were analyzed for the principal kinds of competencies assumed to be required for adequate performance in each. Third, criteria for assessing the relative efficiency of various methods for attaining competencies were specified. Fourth, each major method for developing the desired competencies was assessed in light of the specified criteria, and recommendations about methods were made.

Recommendations

It now remains to organize the recommendations made throughout the chapter in order to suggest preferred combinations of methods for acquiring all of the different kinds of competencies needed by prospective vocational teachers for entry into beginning-level instructional roles.

Table 3-5 depicts the patterns of methods assumed to be most efficient for developing the competencies needed by career and noncareer personnel for the

Table 3-5

Preferred Methods for Acquiring Competencies for Beginning-Level Teaching Roles

Role and Mission		**Kind of Competency**					
		Professional		**Subject Matter**			**General & Knowledge Acquired**
		Training Skills	**Understandings**	**Occupational Area**		**Understandings**	
				Technical Skills	**Appreciations**		
Noncareer Role: Develop Special Occupational Competencies	**Nondegree**	Preservice course and informal internship		Post-secondary vocational program (or on-the-job if necessary)	Work experience		
Career Role: Develop Special Occupational Competencies	**Degree Programs**	Orientation, laboratory experiences, & internship	Teacher education classes	Post-secondary vocational program or teacher education program	Cooperative work experience	Teacher education program or other post-secondary courses	Clinical experience and post-secondary courses
Career Role: Provide Occupational Orientation-Exploration; Facilitate Learning; Other Subject Areas		Orientation, laboratory experiences, & internship	Teacher education classes	Teacher education program	Cooperative work experience	Teacher education program or other post-secondary courses	Clinical experience and post-secondary courses

several missions to be carried out by vocational education programs. Since the reasons for making these final recommendations are imbedded in the network of assumptions that comprise the chapter, they will not be repeated here.

Implications

The purposes of this discussion do not include drawing specific implications from its recommendations for other teacher education concerns. The discussion would not be complete, however, if it did not indicate what some of those related concerns are.

Organization and Administration of Teacher Education Programs: The desirability of conducting cooperative work experience programs, as well as providing orientation and clinical experiences, has implications for the geographic location of teacher education institutions. The relative importance of subject matter and professional competencies, the availability of subject matter courses in the institution, and the extent to which professional and general competencies are considered to be common among the vocational fields have implications for the administrative structure of vocational education in the teacher education institution — within the field of education, in separate colleges, as separate departments, or as a combined department or division.

Research: The most critical questions at this time have to do with the selection and measurement of criterion variables of teacher effectiveness. Teacher education needs agreement upon the kinds of student outcomes to be desired, and must establish the relationships between them and the teacher behavior patterns that most efficiently achieve them. Only then will teacher education be in a relatively secure position to examine empirically the relationships among teacher behaviors, teacher competencies, and the methods designed to develop those competencies.

Accountability for the quality for preservice programs will become more complex as the number of different agencies making contributions to the preparation of each teacher increases.

Additional Preservice Programs: The limitations of the discussion to a treatment of preservice programs for beginning-level teacher roles makes it evident that consideration needs to be given to preparatory programs for the roles in the instructional team, as well as to such specialized roles as master teacher, teacher educator, program coordinator, administrator, research-evaluator, and curriculum developer.

Relationships to Inservice Education: The kinds and the levels of competencies that act as objectives for preservice education provide the input for planning inservice programs designed to meet the individual needs of educators who wish to enhance performance in their current roles or to advance with the teaching team. Teacher education institutions must be sensitive to the needs of the practitioner, help the practitioner plan for appropriate experiences, and then provide those experiences as efficiently as possible whenever they fall within institutional capability and capacity. By what means can teacher education institutions tailor-make inservice programs to meet the needs of individuals and groups as they exist at a given time and place? If master teachers and/or clinical professors are a part of the role structure, what responsibilities should they have for providing inservice training?

Professional Relations: Differentiated staffing means varying orders of responsibility, which is not presently provided for in certification requirements, remuneration schedules, or within the policies of professional organizations. It is perhaps at these points of intersection that the implementation of differentiated staffing will meet its severest test.

Occupational Information for Teachers: Prospective and inservice teachers should be made aware of the competencies required for each role on the teaching team and the methods available to acquire them. Teachers should clearly see the career ladder and the means for climbing it — to whatever rung their aspirations reach and their abilities permit.

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4 Chapter

Assumptions Underlying Inservice Vocational Teacher Education Programs

by Alberta D. Hill

Introduction

The use of the term "assumption" varies in educational literature. As used here, assumptions are not necessarily facts or statements to be taken for granted; they are not axiomatic assumptions. The assumptions made are suppositions and some may be looked upon as hypotheses to be tested rather than assumptions. The major purpose of this discussion will be to develop statements concerning inservice education which may become the genesis for guidelines which help identify issues and/or provide a structure for further clarification of the goals and procedures of inservice education.

Basic assumptions regarding inservice education of vocational educators are made about:

1. The definition of inservice education.
2. The needs for inservice education.
3. The procedures for inservice education.
4. The responsibility for inservice education.

The assumptions are discussed within the frame of reference of vocational education; this focus, however, does not imply that inservice education for vocational educators is basically different than inservice education for other educators and other professional groups.

The term "teacher educator," as used in this discussion, includes all vocational education leaders who accept the role of assisting in the continued growth and development of teachers. This includes local directors, state consultants, administrators, and teacher educators on faculties of colleges and universities, and the staff of education "laboratories" or "centers."

The discussion is focused upon the "teacher" — the person who has direct contact with learners and direct responsibility for instruction. It should be noted, however, that the assumptions apply to all levels of vocational educators, and include directors of local programs, teachers, instructional assistants, teacher aides, college faculty, and supervisors. The assumptions also apply to all types of vocational education in: public schools, skill centers and other community colleges, colleges and universities, private trade schools, and training programs of industry.

Definition of Inservice Education

Inservice education is the continuing education of a person who has previously developed the basic competencies required for entry into a position on the teaching team. The purpose of inservice education is to improve the educator's performance within his or her current educational role, a role for which he or she previously has been prepared. This purpose, and the assumption implied in the definition, has been generally accepted (see "Need for Inservice Education"). But in practice vocational educators have tended to label almost any teacher education activity which is not a part of a formal preservice program carried out within a baccalaureate degree program of a teacher education institution as "inservice." Vocational teachers in the fields of agriculture, home economics, industrial arts, business and office education, and guidance generally have required the baccalaureate degree for beginning-level teachers. Anything beyond the bachelor's degree has been considered as inservice. O'Brian and Shaeffer (1966) in discussing the *misuse* of the term indicate that in trade and industrial education, ". . . we call anything related to teacher education 'inservice teacher education' whether the teacher is initially prepared or not." This type of definition is less than helpful.

Examples of what inservice education is and what should be excluded in a discussion of inservice development may clarify the meaning as accepted in the definition stated above.

The following are examples of inservice education activities for vocational educators:

1. Summer workshop to help agricultural teachers become more skillful in the analysis of emerging agricultural occupations and to translate task analysis into instructional objectives and learning activities.
2. Business and office teachers visiting a number of community colleges and technical institutes to study curricula offered and interview students, faculty, and employers to clarify the content and role of business education in post-secondary education.
3. Workshop for distributive education (D. E.) coordinators to develop guidelines for supervision and utilization of paraprofessionals in the teaching of D. E.
4. A series of seminars for directors of vocational programs focused on improved methods of program evaluation.
5. Guidance personnel using "professional days" within a school year to make planned, purposeful visits to businesses and industries to identify nature of available occupations.

6. Home economics teacher of food services increasing knowledge of occupational field by working in kitchens preparing airline meals.
7. An exchange program between a technical teacher and an employee of a company making electronic equipment (inservice for the former, but possibly preservice for the latter).
8. Trade and industrial teacher working for two or three months in a welfare or educational program with inner-city youth to gain insight into needs and learning problems of these youth.

The following are examples of what is NOT considered inservice education:

1. Subject matter courses taken by a home economist with a degree in clothing and textiles to qualify her or him to teach all phases of homemaking.
2. Evening or summer courses in basic teaching methods for skilled paraprofessionals who are already employed in an instructional role. These may be more accurately called on-the-job preservice education courses, particularly if courses carry transferable credit.
3. A summer program for persons who received a bachelor's degree in agricultural education twenty years ago and are returning to the field after fifteen years in positions related to agricultural education. This assumes that any educator who has been away from the field for a number of years cannot be considered as needing *initial* preparation for reemployment as a teacher.
4. Continuing program to prepare teacher aides and other paraprofessionals to move up a career ladder.
5. Extension courses offered to prepare a vocational teacher to become a guidance counselor.
6. A supervised experience to help a qualified physics teacher develop occupational skill needed to move into a vocational program as a teacher of electronics.

As used in this discussion, inservice education refers to planned, purposeful activities which affect the behavior of an educator. Inservice education may result from the individually planned activities of an individual vocational educator as well as from programs of state agencies, colleges and universities, or local schools.

Distinguishing between inservice and preservice education may seem to be an academic exercise with little practical value, and it is true that some teacher education activities may be hard to classify. Is gaining additional background in ornamental horticulture inservice or preservice education for the agriculture teacher who recognizes increasing opportunities for employment for his students in landscaping and gardening? Is a course in philosophy of vocational education for a certified but unemployed business education teacher inservice or preservice? Would the definition change if the teacher were employed? The boundaries for inservice education are described above to emphasize the need for establishing minimum professional competence for the beginning-level vocational teacher position and to point out that initial preparation is not enough; continuing inservice education is needed for all vocational educators.

The discussion of inservice education reemphasizes the need to establish minimum competencies required for the beginning-level vocational education teacher. The extent to which minimum preservice competencies have been set on a profession-wide basis is limited. Suggested competencies, and categories of competencies, to be developed in preservice education were discussed in the preceding chapter.

Needs for Inservice Education

The definition implicit in the definition of inservice education, that inservice education is the updating and upgrading of an educator who has, in a preservice program, developed skills, knowledge and attitudes needed to begin in his or her role is further developed in this section.

Assumption 1:

It is imperative that vocational educators continue education to improve their performance and to keep up-to-date in: (a) The discipline(s) which provide the subject matter, the basic knowledge for an occupation, (b) the occupational field which is the source of the skills, procedures, and knowledge for occupational education, and (c) new educational processes and methods derived from current research and experimentation.

Modern vocational education cannot be limited to training "how to," for today's students need to comprehend "why." Vocational students still need to develop work skills which they can carry out with precision and efficiency, but because of the complexity of most jobs and the constant changes in processes, procedures and material, most workers also need a background of knowledge to use in making judgments and adapting work skills. There is a cognitive component to every vocational course; and curriculum planners and instructors must be well-grounded in the basic root disciplines, such as metallurgy, biochemistry, or mathematics, and applied fields, such as engineering, nutrition, or computer science, if they are to provide this cognitive component. Inservice education should give teachers both the opportunity to broaden and deepen subject matter concepts and to keep up with new knowledge generated by research.

Keeping abreast of knowledge of the field, however, does not insure that the vocational educator will be up-to-date in the application of this knowledge in employment situations. It is not enough for a health educator to comprehend developments in the diagnosis of disease. If he or she is responsible for training laboratory technicians, he or she must have the ability to use and to understand the theory of use of modern diagnostic equipment. Furthermore, the educator needs to understand the organizational structure of the modern clinic which determines the relationships of the laboratory technician to other professional and technical workers. He or she must comprehend processes such as the data storage and retrieval systems the technician will use.

The rapid developments in the technology of all occupational fields require that educators continue to get experience designed to keep them occupationally competent. If the teacher is to plan and direct instruction which will prepare prospective employees to cope with current and future work situations, he or she must be aware of and have some skill in the use of computerized processes, new tools and equipment, and new materials used in the most advanced segments of the occupation.

The acceptance of new practices in an occupation is gradual. Innovators may adopt a new material, process, or service twenty years or more before it is accepted everywhere. Neither the knowledge in new practices nor the skill of the vocational educator can *follow* the adoption of new procedures by the *entire* occupation; he or she must be, instead, on the "cutting edge" of change. This allows the vocational graduate to be ahead of the generality of occupational practice. The educator should have the background to help forecast changes in the economics, organization, and structure of the businesses, institutions or agencies which employ those being prepared for the world of work.

The assumption that inservice education *follows* preservice training indicates the vocational educator already has developed at least a minimum level of competence in the methods of teaching. The need for inservice education is to provide for *improvement* in ability to develop instructional plans and to guide and evaluate learning.

Knowledge in the "science" of education, as in other behavioral sciences, has developed slowly and erratically. There is constantly emerging from research, however, knowledge which makes possible refinements in educational concepts and processes. Inservice education can serve to acquaint the vocational educator with these refinements and to facilitate their implementation in vocational education. Inservice education should provide teachers with greater depth of understanding of the educational process, as well as keep them abreast of developments, so that they will be able to create their own methods and have greater freedom of choice in the procedures and methods selected. Particularly would this be the case for those at the highest levels on the education team.

An additional need of the vocational teachers which should be served by inservice education is the initiation of teachers into new organizational structures or procedures within the school. Inservice education is needed to help teachers utilize flexible modular scheduling, individualized learning systems, and computerized scheduling. Such inservice education is usually sponsored by the local school adopting the new procedures and is planned for all teachers. If new organizations or procedures are being generally adopted by a number of schools within a state or region, the need for assistance in utilizing the innovative procedures for a particular vocational service may be great enough to warrant organized inservice conferences for teachers from several schools.

The needs for continuing education discussed here are not unique to vocational education. However, some aspects of educational methods may require specialized means of implementation for vocational education and these should be given emphasis. Included are competence in making job market and job performance analyses and in utilizing advisory groups as an essential part of curriculum planning.

Assumption 2:

Increased insight into individual differences among learners and the ability to accept and cope with learning difficulties is an important facet of inservice education for vocational educators.

The demands of our society that vocational education serve all people in all communities is reflected in the legislative directives of the Vocational Education Act of 1963 and especially in the Vocational Education Amendments of 1968. If these directives are to be fully carried out, vocational educators must become more knowledgable about individual differences in learning ability and more skillful in coping with a variety of barriers to learning. New preservice programs are attempting to develop some of these competencies, but there will be much need for continuing education. Preservice education should provide for internalizing the basic principles of learning and developing the ability to apply these in teaching youth and adults who have average capacity for learning at some level of motivation. Considerably more insight is needed to plan programs for the physically handicapped, the gifted, the middle-aged unemployed who have given up, the mentally retarded, the socially deprived, a militantly defensive minority group member, or a youth who sees no value in work. Vocational teachers need to develop effective means of teaching those who are hard to teach and motivating those who do not want to learn.

Inservice education, to give this insight, will require face-to-face experiences with a wide variety of persons. To be effective, the meanings of and reactions to such experiences need to be reviewed and analyzed. It is recommended that the analysis of these experiences be carried out in a group situation so insights can be shared and under the guidance of a person or persons knowledgeable in fields of human behavior. Experiences should be supplemented with increased knowledge gained from reading or formal class work.

An essential objective for this aspect of inservice education is to develop an acceptance of all persons in all communities and a commitment to the serving of all persons in vocational education.

Assumption 3:

An important function of inservice education is to help each vocational educator develop and maintain a zest for his or her role as a vocational educator.

The term "zest" is used here as: a quality of enhancing enjoyment, keen enjoyment, relish, gusto, engagingly provocative, suggesting a power to whet the appetite. This assumption is based more on intuition than fact; more on reflection of personal experience than controlled research. The reader is reminded that assumptions are suppositions, and one purpose for presenting assumptions is to suggest areas which need further study.

Enthusiasm, interest in learners and coworkers, positive attitudes, sense of humor — if not zest — are characteristics often mentioned in the literature as characteristics of effective teachers. There is little in the literature, however, indicating that the development of these affective behaviors is a part of either preservice or inservice education. Some research has explored these characteristics or traits as a basis of teacher selection. Making the assumption that developing and maintaining zest for teaching is a function of inservice education presumes that we cannot rely entirely on selection to ensure engagingly provocative, enthusiastic teachers, and that affective behavior as well as cognitive and psychomotor behavior are responsive to educational experiences.

Informal contacts with vocational educators indicate that the maintenance of zest can indeed be an outcome of inservice education: "After the trip to the plant, I was so excited about . . . . I could hardly wait to try it;" "I always get a 'lift' from contacts with former students;" "The best thing about conferences is the renewed enthusiasm I get from sharing ideas with other teachers;" "Using the new process really stimulated interest." Such comments may be dismissed as those subjectively sifted through the screen of biases of a teacher-educator who wants to feel he has succeeded. However, evidence available seems to reflect this is the general, not exceptional, response to inservice education.

If enthusiasm — a zest for the job — is indeed an important attribute of vocational educators and if sometimes this has been achieved incidentally or accidentally through inservice activities, it is assumed that conscious planning to achieve this objective would yield outstanding results. Our knowledge of human behavior as well as our personal observations support the generalization that personal involvement, opportunity to share with others on an informal basis, awareness of progress, an opportunity to succeed in inservice activities and recognition will help and maintain enthusiastic, positive attitudes. An opportunity for new experience adds zest for living and for one's job. An opportunity to get away from the daily routine of the job to regain perspective can be a valuable inservice activity. Successful mastery of a new skill provides enjoyment which is passed on to students.

Assumption 4:

The basic needs for inservice education are similar for all vocational educators — the relative importance of each will be dependent upon the occupational field in which the educator is working, the organizational structure of the education program, and the type of position held.

The needs for inservice education which are outlined above are important for all vocational educators, but their relative importance for any individual will be influenced by differences in occupational field and position on the teaching team. Guidance counselors may need more inservice study in the interpretation of testing than classroom teachers; directors of instruction will need more work in the theory of curriculum development than those who supervise skill development in a shop; and supervisors may need more work in social dynamics than some classroom teachers. Home economics teachers who are teaching homemaking will renew contacts with the occupation through a variety of informal contacts with homes and families; technical teachers may need to renew skills by working for a period of time in an industry; teachers who are training auxiliary workers to serve as aides to professionals — teaching aides, social case work aides or home health aides — may need to spend considerable time in conferring and planning with members of the profession and observing and conferring with aides, but may not need actual work experience as an aide if they work on a teaching team which does include people with such work experience.

Although basic teaching skills are needed by all teachers, some specific skills such as management of laboratory experiences in welding, to insure safety of the learner, are unique to the occupational field. Also, special competence required to develop learning "packages" may be required in one type of school organization, but not in another.

The variations in needs for inservice education cited above arise from differences in the position and duties of the vocational educator. The assumption is, however, that this is a difference of degree and not a difference in the basic needs for or functions of inservice education. If the common needs for inservice education are recognized, some aspects of inservice education can be planned to serve simultaneously the needs of several groups. Recognition of the *common functions* or elements should also help teacher educators allied with one vocational service to become more receptive to procedures which have proved to be successful in other vocational or occupational areas.

Responsibility for Inservice Education

Assumption 5:

Continuing education is the responsibility of each individual vocational educator; the extent to which inservice education will yield improvements in vocational education is dependent upon the extent to which individuals accept this responsibility.

This assumption can be supported by our knowledge that change in behavior is facilitated when the learner (in this case the learner being the teacher engaged in an inservice education activity) completely understands the objectives to be achieved and perceives the achievement to be important and useful.

The need for a teacher to personally accept responsibility for inservice education has implications for the selection of candidates for preservice programs and for initial employment. To accept the responsibility for his or her own continuing education, the vocational educator must have developed, as a part of his or her total life experience or as a part of preservice education, an ability to evaluate personal needs and set personal goals. The educator must also have a high degree of initiative and a knowledge of resources and, above all, must have accepted the responsibility for his or her own learning.

Individual responsibility for learning does not lessen the responsibility of educational leaders for inservice education. Even teachers who have achieved a high degree of self-direction can use help in analyzing needs, in becoming sensitized to new needs, and in translating needs into specific goals. Administrators and inservice teacher educators have the responsibility for providing resources, the environment and the time to make this continuing education possible. Teacher educators may even find it necessary to provide stimulation or initial incentives.

Extrinsic motivation such as required credits or hours of experience for certificate renewal or salary increments are not as likely to yield important change or improvement in performance as is a more intrinsic motivation. The procedures for evaluation of inservice education carried out solely to meet requirements for credits or hours are usually in terms of clerical reports of quantity and give no evidence of change in quality of the teachers' performance. Under these conditions, teacher growth is usually minimal because the accepted goal becomes fulfillment of the requirement, not the development of ability or the achievement of higher performance goals.

Assumption 6:

Local schools, professional organizations, state educational agencies, associations and organizations of workers, businesses or agencies employing vocational education students, and institutions of higher education all have a responsibility for inservice education. The services of these various groups need to be planned cooperatively and unique contributions of each group identified.

Attempts to prevent overlap of programs or to economize in use of leadership have led to some arbitrary divisions of responsibility. For example, colleges and universities often have assumed all of the responsibility for preservice education, and the staff of some state divisions of vocational education have assumed total responsibility for inservice education. This division usually leads to lack of coordination and articulation between the two aspects of teacher education and denies many of the resources of the state to both the preservice and inservice programs.

Cooperative planning and coordination of inservice education for vocational educators calls for a cooperative, long-range, yet flexible design. Such designs have not been easy to establish. One deterrent to cooperative planning has been the lack of *administrative structures to facilitate planning.* In most states educational agencies and institutions are operated under the direction of a number of autonomous boards, each competing for public financing; federal and state legislation has earmarked funds for special purposes leading to separate staffs and restricting the uses of some resources to specified groups; legal guidelines for cooperation between private business and public agencies are inadequate; channels for communication between local schools and institutions of higher learning are haphazard and channels for communication *among* schools, agencies, businesses and institutions of higher education are almost nonexistent; decisions regarding staffing and budget for inservice education are often made by the level of administration least knowledgable of inservice education needs. The assumption can be made that a really effective master plan for inservice education will be possible only if some changes are made in administrative structure.

Competencies of the individual teacher educators, as well as the structure, will affect the level of cooperation for carrying out inservice education. It seems apparent that individuals responsible for inservice education have not had adequate means of evaluating the results of their work, and there is support for the assumption that if budgetary and evaluative systems "rewarded" cooperative efforts, there would be a greater degree of cooperation. In addition, each individual who assumes responsibility for inservice education needs to be secure enough — as a person and in his position — to relinquish aspects of teacher education which can be accomplished more effectively and efficiently by another individual or agency. The teacher educator who feels he or she must compete for status, salary, or recognition will have difficulty in cooperating.

Procedures for Inservice Education

Assumption 7:

The specific individual inservice needs of each vocational educator are different and the inservice program for each person needs to be tailored to fit his or her needs.

Assumption 8:

The inservice education needs of individual vocational educators can be met better if a wide variety of services, programs and experiences are provided.

Assumption 9:

The total impact of inservice education of an individual will be greater if it is planned on a long-term basis.

The interrelatedness of these three assumptions suggests that they should be presented and discussed together.

If we accept the individuality of the learners in elementary, secondary, post-secondary and adult vocational programs and, therefore, the need for individualizing vocational instruction, it would be logical to assume that vocational teachers are also individuals requiring individualized inservice education. The variables which are related to differences in needs are almost innumerable: age at entry into teaching, breadth and extent of occupational experience, kind and amount of general education background, level of competence achieved during inservice education, sex, nature of teaching responsibilities, family responsibilities, etc. The combinations of these variables are innumerable. Each teacher, supervisor or administrator, then, needs to analyze his or her own needs, establish professional goals, and design an inservice program by selecting those activities which are personally most appropriate. The guidance of well-qualified teachers, teacher educators, and administrators can be helpful in each of these steps.

Individualized inservice education will be possible only if there is a wide variety of inservice opportunities from which to choose. Short intensive courses, summer school courses, extension courses taught within the school in which the teacher is working, two-way televised courses, independent study which may include action research or a thorough study of the literature should be provided by colleges and universities, often in cooperation with local or state educational agencies and/or industry. Professional organizations can plan exchange programs between teachers; a series of field visits to relevant businesses, industries or agencies; and workshops or conferences. Short workshops sponsored by manufacturers of school equipment will keep teachers up-to-date on this equipment. Cooperative exchange programs between teachers and qualified employees or supervisors in hospitals, industrial plants, large farm operations or retail businesses may be an effective means of updating occupational skill and getting input from practitioners for curriculum revision.

Those assuming teacher education leadership roles need to help provide the resources: curriculum guidelines or materials which can be adapted, review or examination copies of books, summaries of research findings, labor market information, etc. Teacher educators can also serve by assisting individuals to develop short term (one year) and long term (five year) plans for personal development. They may also serve in leadership roles in working with administrators and state agencies to see that those carrying out planned programs of inservice education are rewarded.

Some educators can improve their own abilities as well as help others if given opportunities to write reports of teaching procedures successfully used or to make presentations at group meetings. Visits to rehabilitation centers, participation in educational or counseling programs in ghetto areas, and observation in juvenile courts are experiences which may help some educators achieve their inservice education goals.

Assumption 10:

Inservice education will be most effective if planned on the basis of evaluation, research and a clearly defined, consistent philosophy of vocational education.

Programs of inservice education for teachers in different teaching fields have differed in both content and procedures. These programs undoubtedly have been developed on the basis of some implicit assumptions. Some, if not most, of the assumptions and articulated rationale may well be questioned, especially when the basis seems to be tradition or the folklore of a particular field.

Some differences among inservice education programs seem to have been based on differences in perception of what is — or needs to be — included in preservice education. For example, the unique "leadership training" conferences and courses for trade and industrial educators have apparently been based on the assumption that preservice education does not include courses in behavioral sciences. These leadership courses, then, have focused on rather elementary principles of social psychology. In contrast, fewer opportunities of this kind have been offered for home economics education personnel. The implicit assumption in the home economics field is that required preservice courses in sociology, psychology, child development, family relationships and management have provided the background needed. Both assumptions, if indeed they exist, need to be questioned. An explicit assumption which can be supported is that comprehension of basic principles of the behavioral sciences should be an essential part of the preservice education of all vocational teachers and that continuing education in this area is needed by all vocational educators. If individual teachers did not receive a thorough grounding in social psychology as a part of their preservice education, this lack must be remedied through an individual plan for inservice education. It does not make sense to shape inservice education for an entire field of vocational education to compensate for the inadequacies of the preservice education of some or even most of the teachers in that field.

Other implicit assumptions on which inservice education has been planned are related to accepted effectiveness of a particular method of inservice education. Agriculture and home economics teacher educators have expended a considerable portion of inservice resources on supervisory visits to schools even though there is little evidence to indicate that this use of personnel and money yields better or equal results than other forms of inservice education. Some vocational fields, to a far greater extent than others, have brought teachers together to write curriculum materials as an inservice experience. The teachers who have direct contact with learners certainly have a contribution to make in development of curriculum guides, and well-written curriculum materials will help many teachers. However, there is little evidence that the activity of writing curriculum guides improves teaching competence.

It has been pointed out that research in the area of inservice education is limited — some research findings are incomplete, and some generalizations drawn from research are contradictory. However, there has been enough reinforcement from repeated or related research studies to provide us with more sound data than is currently applied in inservice programs. Some progress has been made in identifying the tasks performed by various educators and in describing effective teaching. (See Chapter 3, Assumptions Underlying Preservice Programs.) These studies help clarify objectives for inservice as well as preservice education. Research has helped identify commonalities of various occupations which can be used in organizing programs for teachers. There is considerable data available concerning the effectiveness of feedback to teachers in bringing about change — the differences among feedback from students, co-workers, supervisors and employers; the relative effectiveness of video tape feedback; the kinds of changes in teaching behavior which can be brought about by various feedback techniques. This information can be applied to plan inservice experiences unheard of ten years ago.

It is difficult for human beings to give up traditional ways, and in some instances tradition developed from soft data and "common sense" should not be discarded. Quality of programs for inservice education, however, will be dependent upon the ability of vocational educators to give up vestigal procedures in inservice education which are contradicted by research, and on the ability to organize research to answer important questions which are in doubt.

Recommendations

An attempt is made here to derive from the discussion of assumptions underlying inservice vocational teacher education programs a few summary recommendations. The recommendations are stated from the point of view of the field of vocational teacher education and are not directed toward any particular agency or group. The order of presentation indicates a possible priority for these recommendations:

1. Continue the process of identifying teacher behaviors (performances or competencies) required for effective teaching. This effort must focus on the ultimate goal of vocational teaching, the preparation of individuals to perform competently in occupational fields. Clarification of beginning-level teaching behaviors required in vocational education will guide the revision and development of preservice education and establish a baseline from which inservice programs can be built.

   Current attempts to classify or categorize teacher behaviors need to be further refined not only to provide a structure for research, but also a framework which will help in the identification of the common and unique behaviors required for teachers who have varying roles in a wide variety of vocational fields.
2. Develop preservice and inservice programs which have as an accepted goal the development of knowledge, skills, and attitudes required for continued learning. The conscious goal of educating for continuing education can be implemented only by more precisely identifying the skills, attitudes, and knowledges needed for continued learning and by incorporating experiences into the preservice program which are specifically designed to develop these abilities.

3. Develop at state, regional, and federal levels the administrative structure which will facilitate coordination of inservice education. The purposes of coordination should be to develop long-range plans upon which teachers could depend; maximize the effective use of funds, leadership, and facilities; and make available a wide variety of programs from which teachers could choose elements to design a truly individualized inservice program.
4. Extend and improve evaluations of the outcomes of vocational programs. More extensive, accurate, and valid evaluation of the performance of recipients of vocational education will yield valuable clues as to the effectiveness of the teacher and help identify greatest needs for inservice education. Teachers need to be actively involved in gathering data and in formulating recommendations for their own inservice education; but evaluations to determine inservice needs should go far beyond a collection of teacher opinions, desires, or perceived needs for inservice education.

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Chapter 5

Curriculum Development in Vocational Teacher Education: State of the Art and Developmental Needs

by Elizabeth J. Simpson and Mary L. Ellis

Introduction

Granted that the teacher is the key element in any educational program, if teaching is to be improved, we are then obliged to investigate the teacher preparation programs from which teachers and other educators emerge. The teacher inevitably is affected by his or her preparation: the philosophy of the program, its objectives, content, process, learning experiences and teaching strategies, facilities and teaching aids, and means of evaluation all serve to help determine his or her effectiveness as a teacher. While traditionally oriented programs are likely to produce traditionally-oriented teachers, innovative programs, alert to new concepts and practices, encourage the same alertness in the future teacher. Perhaps the most significant aspect of the teacher education program is the curriculum. This discussion is an attempt to assess the state of the art and the developmental needs of curriculum development in vocational teacher education.

A specific curriculum model for vocational teacher education will not be presented in this discussion. Instead, a number of criteria and suggestions for developing innovative models will be presented. Decisions regarding the criteria and suggestions have been based on: beliefs concerning education in general and vocational education in particular; socioeconomic conditions and needs; analyses of the teacher role and implied educational needs; and educational developments relating to methodologies of curriculum development, patterns of curriculum organization, and technological developments, such as the use of computers as instructional aids. Throughout this discussion, the teacher education curriculum is conceived as having four major, interrelated components: objectives, content, learning experiences, and evaluation.

Curriculum for Vocational Teacher Preparation — The Present Scene

Reasons for Lack of Innovation

It is a source of concern that, whereas considerable innovative development is taking place in secondary and post-secondary vocational education curricula, there is relatively little development in vocational teacher education. This is particularly true at the preservice level. What innovation there is tends to be at the inservice level where the major vehicle for development of new ideas is the short-term activity.

There are several reasons why colleges and universities have been slow in changing the curricula of vocational teacher education:

1. Getting program changes through the complicated university machinery is a slow and difficult process. This is particularly true for the preservice program.
2. In many colleges and universities, the teacher education programs for the substantive areas of vocational education are located in different departments, schools, and/or colleges. Thus, it is difficult to achieve the communication and cooperative activity needed to implement program changes that seem indicated by needs and trends in vocational education.
3. There is a history of conservatism in the teaching profession. Much of teacher education has been oriented toward the concept of "passing on the social heritage," and the traditions of the past have provided both the content and the rationale for the curriculum.
4. Change is generally threatening and change in a specific may be particularly threatening to those who have a strong sense of identity with the field — especially those who have invested heavily of time, money, and emotion in becoming specialists and building careers based on an area of specialization. Such specialists are found in the substantive fields of vocational teacher education. Major changes in the nature of the teacher education programs, particularly those which threaten past identifications, have been resisted.
5. As paradoxical as it may seem, there is probably less intense pressure for change in vocational teacher education than in other areas of public school program. With a few exceptions, state directors of vocational education give primary, and almost exclusive, attention to the state's basic operational programs. They may complain about the teacher education programs and, at the same time, not wish to invest much money or effort in programs for improvement. Historically, state directors of vocational education have come from the ranks of vocational teachers and supervisors and not from teacher education. Perhaps this accounts, at least in part, for their appearing to be less interested in teacher

education, particularly at preservice levels, than in other aspects of vocational education.

6. Pressure from Congress for changes in vocational education is primarily directed at the local schools, not at teacher education programs. Emphasis has been on early payoff activities geared to the mitigation of social ills.
7. The pressures from "groups with special needs," such as the poor and minority groups, have been for immediate solutions to their problems; and these pressures have been felt most keenly in vocational education at state and local levels. They have resulted in development of and changes in training programs for the special needs groups — but have not resulted in much pressure for change in teacher education, which is viewed as a long-range concern.

But the identification of the reasons for a lagging curriculum does not insure an automatic adjustment. Such an evaluation does offer, however, some direction and guidelines for program improvement if pressure for change can be brought to bear. There is pressure for change in vocational education, but it has not been as evident in teacher education as in other facets of the program. Perhaps the cloistered nature of institutions of higher education, whether it occurs as a result of indifference or of ignorance of the real needs of the profession, has contributed to the teacher educator being relatively isolated from outside pressures.

With the recent turmoil on university campuses and the increasingly vocal demands of students for "relevant education," however, the posture *appears* to be changing. Teacher educators may be becoming more responsive to student demands, but there is no assurance that major improvements will result. Students are generally asking for a participatory role, particularly in establishing institutional policies, and such demands are seldom addressed to questions of specific program content. Nevertheless, students in some institutions are causing teacher educators to stop and take stock of what they are doing.

Curriculum Scene Changing

The current trend in the educational literature toward a "career education" approach, as opposed to the narrower vocational education concept defined in current legislation and practice, has implications for the curriculum in teacher preparation. The following components of a "career education" program suggest emphases for curriculum content and methods: (a) orientation to the world of work, (b) knowledge concerning occupational possibilities and career ladders, (c) occupational skills and related knowledge and abilities, (d) attitudes conducive to occupational responsibility, and (e) knowledge and abilities related to general employability — personal development, human relationships, nutrition, consumer education, management of resources, and responsible parenthood. Some emphasis is currently being placed on preparing "career education" materials and teachers for programs to serve people at each age level from early childhood to retirement and to cover all career levels from professional to unskilled. This inevitably will result in a closer relationship between vocational and general education, and may result in new course offerings with titles such as:

- Career Education at the Elementary Level
- Career Education at the Junior High Level
- Career Education at the High School Level
- Career Education at the Post-Secondary Level
- Career Education at the Adult Level

Federal leadership development programs for preparing vocational educators have placed Fellows (supported by Educational Personnel Development Act funds) in several institutions which have shown some potential for curriculum innovation. For example, a review of courses offered by each of the institutions conducting an EPDA program indicates a definite trend toward offering across-the-board courses (general courses which enroll students from all of the substantive areas of vocational education). Such courses as the following are increasingly being offered as general (across-the-board) courses:

- Theory (Philosophy, Foundations) of Vocational Education
- Principles and Practices in Vocational Education
- Organization and Administration of Vocational Education
- Curriculum Development in Vocational Education
- Research Methodology in Vocational Education
- Contemporary Problems and Issues in Vocational Education
- Evaluation in Vocational Education

In addition, each institution conducting an EPDA program in vocational education also requires an internship for all doctoral candidates. "The internship is viewed as an opportunity for the EPDA Fellow to relate theory to practice, to study the behavior patterns and activities of those presently active in leadership positions, to analyze and reflect upon his own experiences, to study the nature of the unit to which he is assigned, and to serve as a participant-observer with an opportunity to journalize his experiences and insights" (North Carolina State University). Such internships usually are offered in connection with a seminar course which provides students with an opportunity to share common and unique experiences.

Robert Pruitt (1970) has expressed the belief that the curriculum patterns in vocational education have implications for curriculum patterns in teacher education in the sense that acceptance of a given pattern suggests emphases in the content of a teacher education curriculum that would prepare teachers for working within that curriculum pattern. Teacher educators might consider these alternatives as one basis for planning the vocational teacher education curriculum.

The first pattern is traditionally oriented in the sense that the curriculum content is based on job analysis, and the student is prepared for an entry level position in one or a group of occupations below the professional level. The effectiveness of the curriculum is judged by the proportion of those graduating from the program who become successfully employed in the occupation for which they were prepared. It is assumed in this curriculum pattern that general education content is unrelated to the immediate goals of vocational education. If general education content is presented at all, it is assumed to be presented by non-vocational educators and to be either a prerequisite to vocational education or offered concurrently, but unrelated to the vocational curriculum.

This traditional pattern is most commonly employed in the secondary schools and to a lesser extent in junior high school prevocational programs, such as certain types of industrial arts and general homemaking education. It should be pointed out, however, that this approach has been used for years in the community and junior college programs, in the military training schools, and by private schools and industry.

The "Richmond Plan" exemplifies the second pattern in curriculum organization. This plan originated in Richmond, California, and is directed toward preparing technicians, especially in engineering. The target student population is the average, but undermotivated student who is achieving below his ability. While confined to technical education, the plan could be applied to all areas of vocational education. Curriculum units are planned by a team of educators around a core technical project furnished by a technology instructor. Each teacher from science, math, and English then develops his or her lesson plans focusing on the technical project and stressing their interrelatedness. Here, the academic course gains relevance as it provides for vocational education applications.

A third curriculum pattern is exemplified in Project Able at Quincy, Massachusetts. This program involves students from the tenth grade and above, including a two-year post-secondary curriculum. Project Able is built around eleven occupational families which encompass 255 specific occupational skills. Integration of general and vocational education, utilizing vocational education as the vehicle for teaching general education, is achieved by an inter-disciplinary staff assigned to each of the eleven families of occupations. The interdisciplinary staff is composed of one teacher from each of the sciences, math, social studies, English, and from a vocational specialty. Although general and vocational education are integrated in this program, the central purpose is to prepare students to become employable.

A second exemplar of pattern three has been developed through the Industrial Arts Curriculum Project, headquartered at The Ohio State University. The IACP program is designed to reinforce student understanding of broad concepts and principles of technology. It provides for a two-year sequence in industrial technology for junior high school students. The first year's course, *The World of Construction,* is a study of man's managed-personnel-production system which produces constructed projects on a site. The second year's course, *The World of Manufacturing,* is a study of man's managed-personnel-production system which produces society's manufactured products in a plant. Both courses develop the general theme: "how to work efficiently with men, materials, tools, and techniques."

A fourth curriculum pattern at high school and post-high school levels emphasizes individualized instruction in the sense that provision is made for programmed instruction in which the student moves at his own rate or speed. Continuous feedback for motivation is provided as well as evaluation in terms of achievement and comprehension. The Technical Education Research Center (TERC) has developed an Individualized Manpower Training (IMT) System for manpower staff under a contract awarded by the U.S. Department of Labor. As a part of this project, experimental and demonstration programs were established in several area vocational schools in the southeastern United States. State directors of vocational education, teacher educators and others involved in this project believe it has implications for vocational teacher education curriculum. This pattern could be integrated with any of the foregoing or with the "career education" model.

The fifth curriculum pattern is a "career education" model. The dictionary defines "career" as "a profession or other calling demanding special preparation and undertaken as a lifework." This career education emphasizes both special preparation and lifework. The term "career" implies commitment, direction, and planning — concepts not necessarily involved in the more limited idea of job or employment.

Career education goes far *beyond skill training*. The concept is broader than that implied in recent vocational education legislation which emphasizes secondary and post-secondary educational programs. But, it is not so broad as to include *all* education as some would believe — at least not in the sense most meaningful to the educator whose primary concern is education for the occupational role.

It is purpose that helps determine whether or not study in a given area is a part of career preparation. Both the purposes of the student and of the teacher are important, and it is hoped that they agree. But in case of disagreement, the student's purpose is most important. Of course, a student's purposes might change and what is taken for personal reasons, unrelated to employment today, might serve career purposes in the future. But, in planning educational programs and activities for career development, the question of purpose is basic.

Career education includes the following components: orientation to the world of work; knowledge concerning occupational possibilities and career ladders; occupational skills and related knowledge and abilities; attitudes conducive to occupational responsibility; and knowledge and abilities related to general employability — personal development, human relations, nutrition, consumer education, management of resources, and responsible parenthood.

Career education begins in early childhood and continues throughout the adult years. It covers the range of occupational levels, from those requiring minimal skills and knowledge to those professions with the most sophisticated bases of knowledge and skill. These two integral aspects of the scope of career education suggest significant implications for curriculum development and teacher preparation.

It is apparent that the foregoing patterns involve different concepts of curriculum. Pattern one, *the traditional pattern,* is concerned with the *scope* of the program, both in terms of content and length. Sequence of offerings at junior and senior high school and higher levels is also involved.

Pattern two (e. g., the Richmond Plan) is primarily concerned with *content.* Here, briefly, the general education courses serve as vehicles for carrying vocational education content. Conversely, pattern three (e. g., Project Able and the Industrial Arts Curriculum Project), also is concerned mainly with *content,* but provides that vocational education courses carry general education content. Both patterns, however, aim at greater educational relevance as perceived by students.

Method is a key dimension of pattern four (e. g., Individualized Manpower Training). There is emphasis on the individual progressing at his or her own rate, using methods that permit a high degree of individualization of instruction.

Pattern five (career education) is broad in its content and in the levels of occupations covered. It assumes *lifetime education* for one's occupational role.

Patterns two and three are, for the most part, mutually exclusive, as are one and five. But, pattern one can coexist with patterns two, three, and four; and pattern five can coexist with two, three, and four. Four can be an integral part of any of the others, but it is least likely to be involved in the most traditional pattern.

According to Feirer and Lindbeck (1970), a need exists for improving the articulation between programs and courses in community/junior colleges and senior institutions which prepare industrial education teachers. Two kinds of programs are recommended which have implications for developing teacher education curricula:

> *The Partnership Program* (two and two) is a planned curriculum developed cooperatively by the community/junior college and the senior institution with a structured preindustrial teacher program at the community/junior college. It is designed as another career opportunity for students wishing to take vocational-industrial and technical classes. This two-year curriculum should be accepted at the senior institution as the first two years of a degree program in industrial education. It is designed for students who decide to become industrial education teachers before entering community/junior college.
>
> *The Pyramid Program* (two plus two) is a plan for building a four-year industrial education degree on the Associate of Applied Arts degree in technology. The senior institution would tailor a program for the technical graduate, building on his or her technical competencies such additional courses in mathematics, science, education, and general academic as are needed to prepare him for teaching in vocational-industrial or technical education. It is designed for students who decide to become teachers of industrial education later in their community/junior college experience or before they enter the senior institution.

The investigators are now proposing a study which would broaden the application of such programs to all areas of vocational teacher preparation.

Curriculum Problems in Vocational Teacher Preparation and Suggestions for Solution

There is a need for reexamining the total field of vocational teacher preparation, particularly the curriculum, and for the trial and testing of promising new concepts. Following are some of the specific problems and ideas for exploration.

What Are the Foundations of Vocational Education?

The theories of vocational education have not been well-articulated; this is the *major* weakness of the field. The failure of vocational educators to come to grips with some of the basic problems lies in their failure to give consideration to the field's theoretical and social foundations. Such foundations are imperative to both teacher preparation and curriculum development.

Exploration in the theoretical and social foundations of vocational education (or career education) is needed to provide direction, rationale, and justification for decision and action in vocational education, including teacher preparation. For example, such questions as the following should be explored: (a) What are the interrelationships between the "world of work" and the social institutions — educational, economic, political, religious? (b) What is the relationship of vocational education to the nation's manpower, social, economic and political policies? (c) What is the place of vocational education in the public sector and in the private sector? (d) How do (should) general and vocational education relate to each other, especially in terms of the "career education" concept? (e) What are the theoretical bases for curriculum decisions and sources of substantive directives for curriculum planning in vocational education? (f) What are the social roles and responsibilities of vocational (or career) education?

In considering the social foundations of vocational education, such social and economic conditions as the following might be considered:

1. High unemployment and underemployment rates among certain groups;
2. Changing occupational requirements;
3. Mobility of population;
4. Population density in urban areas;
5. Shrinking world, time, and space compression;
6. Tensions of modern urban life;
7. Improving economic condition of many black Americans and concomitant changes in family life;
8. Polarization of black and white in America, of affluent and poor, of youth and adults;

9. Increasing trend toward organization and power struggle on the part of various ethnic groups;
10. Perceived and actual lack of relevancy in the educational experience of many young people and adults;
11. Developing revolution of women with all of its connotations;
12. Vigorous entry of the private sector into educational programs, particularly in vocational areas;
13. Movement toward increased accountability in education;
14. Movement from a primarily production-oriented to a service-oriented economy;
15. Emphasis on sensation, emotion, sensuality — less on reason and logic (evidences: R-rated movies; sensitivity training, present educational emphasis on "feeling," "soul"; the drug scene; modern music and art; etc.).

Establishing sound social and theoretical foundations for practices in vocational education presents a great challenge to forward-looking teacher educators. The establishment of such foundations would also assist in development and implementation of curricula based on sound values as well as current and projected social conditions.

In revising the teacher education curriculum in vocational or career education, an obvious first step is the articulation of the basic beliefs and values and the implications of social phenomena on which curriculum decisions will be based. Evans (1971) has taken a significant step in this direction with the publication of his *Foundations of Vocational Education.*

How May We Present Vocational Education as a Coherent Whole?

Emphasis in vocational teacher preparation has been on the preparation of teachers for specialization in the substantive fields of agriculture, business and office occupations, distribution, home economics, trade and industry, and allied health occupations. Such courses as the following have been common: methods in agricultural education, methods in distributive education, methods in industrial education; evaluation in home economics education, evaluation in business education, and so forth.

Limited, albeit increasing, attention has been given in teacher education programs to the interrelationships among the occupational fields, the common and unique content of the fields, and the preparation of teachers for occupational fields not covered in these categories. There has been much emphasis on the knowledge and skills needed for occupational competence, but little on the problems and needs related to orientation to the world of work, to general employability, to the "career ladder" concept and its implications for education and teaching.

Rationale for "presenting vocational education as a coherent whole" lies in the following considerations:

1. Most occupations call for competencies related to several categories of vocational education, not just one. Teachers who are narrowly prepared may not appreciate the spread of competencies required and may, themselves, provide for a narrow, single-dimensional kind of job training.
2. Workers need to function in a world of work with those in many occupational areas. Teachers with an understanding of vocational education as a totality are prepared better for facilitating effective functioning in this real work world.
3. There is less danger of gaps in understanding and knowledge about vocations and vocational preparation if teachers are broadly prepared.
4. A broad preparation may lead to greater adaptability in teaching and guiding vocational students.
5. The goals of *efficiency and economy* in teacher preparation may be served by a program that prepares *vocational educators* who have a specialty rather than *vocational specialists* with little understanding of vocational education as a whole.

The whole concept of career education as an area of national education priority, as identified by the present federal administration, gives impetus to the trend toward developing vocational education programs as a coherent whole. The following are some specific strategies involved in presenting vocational education as a coherent whole to the teacher education student:

1. Determine what is common and what is unique with respect to the training needs of vocational teachers in the various fields, not only in terms of concepts and methods but in their applications. Dimensions of commonality to be considered in such efforts include: content, methodology, and socio-legal factors.
2. Building on commonalities, provide for across-the-board courses in vocational teacher education at both undergraduate and graduate levels. Such efforts are underway in a number of institutions of higher learning. These courses provide for exchanges among students in the various categories of vocational teacher education. They serve to broaden understanding of the basic concepts and generalizations of the total field of vocational education.
3. Unique curriculum content may be included in specialized courses in the various substantive areas of vocational teacher education. Even here, a broader orientation might be achieved in a program organized and based upon more comprehensive occupational categories: for example, *Production Education,* with emphasis on the generalizations of production of everything from baby chicks to airplanes; *Transportation and Communications* (despite the fact that there are more people employed in these areas than in the whole of production and that there is a recent

rapid development of curricula for training programs in transportation education, there is no four-year vocational teacher education program in the country that prepares specialists in this area); *Business and Distributive Education,* two fields with much in common, although specialists in two fields usually emphasize the differences rather than the commonalities; *Personal and Public Services,* which would include such service areas as child care, food services, pollution abatement, and protective services; and *Allied Health Services,* pulled out of the personal and public service area because of the phenomenal expansion of health services and the need for technically-trained personnel. In such an organization, *Family Life Education,* geared to the development of employability and preparation for the dual role of wage earner-homemaker, and *Guidance* would serve as vital ancillary programs.

4. Structure the vocational teacher education unit (usually a department or division) to include the subgroups of teacher education specializations (the substantive areas), however categorized. A number of universities are moving in this direction with a department, division, or college of vocational (or occupational) education. In the early stages of reorganization, growing pains associated with this change are often so severe as to inhibit much creative program development.

What Are the Curriculum Implications of Some Educational Personnel Working Inside and Some Outside the Formal School?

Traditionally, vocational education teachers have been prepared to teach in the formal classroom and, to a more limited extent, to supervise cooperative work experiences. Student teaching experiences at the undergraduate level have been in school-based learning situations. At the graduate level, internship experiences are beginning to provide for a broadened concept of vocational education and its settings through experiences with industry and social-welfare programs having career education objectives.

Educational programs that prepare for employment and employability may be based in a school, in industry, in social-welfare organizations, or in the home. To date, the curriculum in teacher education has generally assumed some type of school setting. But, increasingly, options for career education are being developed to meet the varied needs, interests, and life styles of students and prospective students. These suggest curriculum revisions, the exact nature of which is yet to be determined.

A fast developing educational technology, for example, makes study at home or in a community center increasingly feasible and likely. A mix of such media as television programs, radio programs, tape cassettes, computer-aided devices, and correspondence courses might be employed in a planned home-based career education program which could serve as an alternative or adjunct to a school or industry-based program. The correctional institutions might make effective use of such a system.

Other possibilities include: (a) career education programs based in a consortium of industries, and (b) career education programs supported by a single social-welfare agency or by a consortium.

There are already bits and pieces of these alternatives to the school program in career education. As the alternatives become increasingly operative, as they surely will if life-time career education for all is to become a reality, teacher preparation programs will have to adjust content and methodology to take these developments into account.

What Are the Implications of the "Career Education" Concept?

Career education begins in early childhood and it extends through the adult years. It includes preparation for all levels on the occupational ladder. Hence, many teachers must be prepared for working with students of all ages and in various types of educational settings and for programs geared to the needs of workers at all rungs of the ladder. With respect to the last requirement, it is important that provision be made for horizontal and vertical job mobility and that this concept be emphasized in teacher preparation programs.

Increasingly, teachers will need to be prepared for career education in early childhood programs, the elementary school, post-secondary and adult, as well as secondary school educational programs. Content and methodology in programs of teacher education must be adjusted accordingly.

What Are the Implications of an Increasing Technology for Instruction?

There are a variety of instructional media which may be employed to enhance student learning opportunities. Teacher education programs should provide for awareness of and ability to make use of a variety of these technologies.

The teacher education student should, for example, become acquainted with the uses of micro-teaching techniques, computer-managed instruction, and various types of audio-visual media. He or she should be prepared to select and use in various teaching situations those media which hold most promise for given student learning objectives.

Is the "Politics of Education" Appropriate Content for the Teacher Preparation Curriculum?

Politics and education will be inextricably united in the '70s. The vocational educator of today needs at least an awareness, and at best a concerned, informed, and responsible involvement in the politics of education. Educational programs are affected by political decisions, and what an educator does effects political decisions. Consequently, the politics of education as content in the vocational teacher education program is imperative.

What Instruction in Planning Is Needed by Today's Teachers of Vocational Education?

Increased emphasis in vocational teacher education programs should be given to planning. Such preparation should be included at both undergraduate and graduate levels, and would include consideration of:

1. Bases for curriculum decisions, including needs of students, manpower needs, socioeconomic conditions and needs, relevant legislation, and conditions and needs of the local community;
2. Who should share in program planning — students, parents, agency representatives, representatives of business and industry, and school officials;
3. Methodology of planning. The concept of "management by objectives" and various techniques and tools for planning should be included as content;
4. Strategies for implementing plans. How to move from plans to operational programs is significant content for an up-to-date vocational teacher education program.

Graduate seminars in management would be helpful and could include such content as: basic communication concepts, group operating practices, methods of planning and problem solving, planning and managerial styles, and criteria for effective management. Instruction in modern fiscal practices and in PERT (critical line planning) might also be included in teacher preparation programs at the graduate level.

What Are Some Areas of Special Need in Vocational Teacher Preparation?

Traditionally, vocational teacher education programs have been oriented to the needs of rural communities. Needed are programs which provide special preparation for work in the urban setting. Content might include the "inner-city syndrome": density of population and events, crime and delinquency, prostitution, family disorganization, alcohol and drug addiction, unemployment and underemployment, militancy of response, and problems related to ethnic identity.

Teachers are needed who are prepared to work with different ethnic groups. Minors in such areas as Black studies, Spanish language, Puerto Rican culture, and American Indian culture are possibilities.

Teachers who can work effectively with students having special needs, such as the physically handicapped or slow learners, are in demand. Minors in special education offer interesting possibilities, especially at the graduate level.

There has been much concern for the student who is disadvantaged socially and economically. An examination of summer school offerings in vocational teacher education and the workshops, clinics, conferences, and institutes sponsored by the U.S. Office of Education, state departments of vocational education, and local school systems reveals increased emphasis on programs for the disadvantaged, special educational needs of women, educational "relevance," and urban education. Special preparation for working with this student should increasingly be provided in programs of vocational teacher education.

Whereas considerable emphasis has been placed on preparing teachers to work with the disadvantaged students, particularly during the last half of the '60s, almost no attention has been given to preparing teachers to work with gifted students. The authors could find no vocational teacher education program in the country which gives special emphasis to the characteristics of and teaching strategies for gifted students. This omission is a matter for concern since there is a great need for leadership in the field and, conceivably, special emphasis on vocational education or "career education" for the gifted could help attract gifted students to teaching in the field. Surely some teacher education institution could develop an innovative program in special education of the gifted which would emphasize career education. Special teacher preparation should be provided for:

1. Work with aging, with emphasis on counseling, upgrading, and retraining;
2. Career education of young children;
3. Work with migrant workers for improving employability and general quality of life;
4. Career education of the "blue collar" worker, who, according to a recent memorandum of the Secretary of Labor (Roscow, 1970), carries the greatest burden of taxation in America, suffers most the ravages of inflation, and is consistently excluded from assistance programs because he supposedly earns enough money to take care of his own needs; and
5. Career education of women.

As somewhat militant feminists, the authors believe that it is appropriate to pause here to give some special emphasis to career education of women. Women are only one group having special needs, but a group whose special needs have been given little attention in the literature and programs of the field.

WOMEN: What Are Their Career Education Needs and What Are the Implications for Vocational Teacher Preparation?

The 1970's emerging revolution of women forces attention to the problems and deficits in the work lives of women, and in their education for earning. A minor in education for women might be a possibility. Some related considerations for those in vocational teacher preparation include:

1. An increasing proportion of women are working outside the home. Thirty million are currently gainfully employed.
2. Practically all employed women are homemakers in a very real sense, whether married, divorced, or single. Most are married and a large proportion are mothers with children still at home.

3. Nine out of ten women may expect to be gainfully employed during their lifetime.
4. The most startling increase in the labor force in the '70s is expected among women workers aged 45 and over.
5. The work of women is essential to the economic well-being of the nation. Society is the loser when women are confined to certain approved occupational roles and life styles and when their vocational self-concepts are as restricted as they are at the present time.
6. Many women work to support a family or to supplement a husband's inadequate income.
7. There is no room for doubt that women suffer discrimination in employment. They tend to be employed in female-stereotyped jobs, at lower pay, and with less opportunity for advancement than is afforded men in the same occupational category. The black or other minority group women suffer two kinds of job discrimination and are the least advantaged with respect to their employment.
8. Job-stereotyping occurs in the elementary school (but may begin earlier) through the stories that always present an intact family with the mother as full-time homemaker and the father as the only family member employed away from home. Fathers are frequently used as resource persons to tell about their jobs, mothers rarely.

For the foregoing reasons, the field of vocational education must give increased attention to the career education of women. Implications for the vocational teacher preparation curriculum include: presenting the facts of women in the world of work as curriculum content; emphasizing the need and possibilities for employment of women in a variety of occupational roles — including some which have been stereotyped as "men's occupations"; providing for teacher preparation for understanding, guiding, and training the mature women for occupational entry or reentry; preparing home economics teachers for special emphasis on the dual role in their teaching and counseling; providing for the development of curriculum materials for the elementary school on women as employed persons.

New courses and units of instruction in career education for women are being developed in a few teacher education institutions, but more emphasis is needed in this area.

Summary and Conclusions

The vocational teacher education curriculum is an area of neglect and challenge. Major changes are needed if the field of vocational education is to respond to the social problems of the day and the educational needs of those whom it should serve. Traditionalism has ruled too long in teacher education. The price of preserving old identities has been the failure of the field to respond to its needs and challenges.

In summary, the following recommendations for the vocational teacher education curriculum are presented for consideration:

1. Give support to basic research in the philosophical and social foundations of vocational education which is needed to provide direction, rationale, and justification for program development.
2. Provide an understanding of the role and function of vocational education with respect to the nation's social, political, and economic goals.
3. Determine methodology for the integration of vocational and general education, and prepare teachers accordingly.
4. Determine scope and sequence, content, and methodology for a life-long program in career education.
5. Explore alternatives to curriculum organization based on existing fields of service. Provide for research and developmental projects in terms of viable alternatives.
6. Give increased emphasis to program planning and budgeting as content in vocational teacher education programs.
7. Give increased attention in the vocational teacher education curriculum to:
   a. Women and the world of work
   b. Individuals with special needs
   c. Cultural subgroups
   d. Gifted students
   e. Vocational education at post-secondary levels
   f. The aging who need retraining and upgrading
   g. Orientation to the world of work at the elementary level
8. Emphasize quality rather than quantity in work experience requirements and course work.
9. At both the preservice and inservice levels, provide across-the-board vocational teacher education courses emphasizing commonalities with respect to content, methodology, and socio-legal consideration.
10. Prepare teachers broadly for work in the informal, as well as the formal, educational setting.
11. Give some emphasis in teacher education programs to new concepts of industry-based and home-based career education.
12. Provide prospective teachers with confrontation experiences with students having special needs.
13. Include in the program of teacher education experiences with multi-media instruction, including the use of computers in teaching.
14. Include the "politics of education" as content in the vocational teacher education program.
15. Emphasize the "career-ladder concept" in the total program of vocational teacher education.
16. Provide teacher education experiences in using the community as a learning laboratory.

17. Prepare teachers to make effective use of advisory committees and to utilize business and industry in developing cooperative education programs.
18. Help teachers become increasingly aware of the ancillary services available and needed to enhance vocational development.

To conclude, it is apparent that the entire curriculum in vocational teacher education is in need of intensive examination and revision. "Patching up" will not answer the present need and challenge.

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6 Chapter

Organizational Structure of Vocational Teacher Education

by Robert E. Taylor and Aaron J. Miller

Introduction

This discussion will focus on organizational and administrative patterns for vocational teacher education. A major portion of the discussion is directed toward *structural considerations within college and university settings;* emphasis is also given to similar considerations in state departments and local school districts. Problems of financing vocational teacher education are discussed as are the problems associated with personnel development requirements associated with implementing the Vocational Amendments Act of 1968. It is recognized, however, that colleges and universities have a leadership role and should, within their sphere of operation and charter, consider other personnel requirements in related areas. That is to say, colleges and universities should exercise some initiative and imagination, and look beyond the need for teachers and other support personnel as implied in vocational legislation.

Structural Considerations in Vocational Teacher Education

"The importance and necessity of continuous leadership development in the various states is inherent in the federal legislation" (Mobley and Barlow, 1965, p. 194). The organic Vocational Education Act (Smith-Hughes, 1917) recognized the importance of personnel development and provided for the "training of teachers, supervisors, or directors of agricultural subjects, or of teachers of trade, industrial or home economics subjects."

As additional legislation created new dimensions and responsibilities, with attendant personnel development needs, vocational teacher education functions expanded. Or, more precisely, professional personnel needs expanded. In most instances, organizing and staffing for these expanded needs was accretionary and a matter of expediency and administrative convenience; consequently, the present organizational structures for vocational teacher education tend to reflect this disjointed incrementalism. The National Advisory Council on Vocational Education noted, "There has been a continued development of teacher education on the basis of occupational categories rather than a concentration of programs serving all services on one campus. This practice does not foster the concept of a broad view of *vocational* teacher education" (Essex, *et al.*, 1968, p. 279).

By and large, college and university organizational structures for vocational teacher education have not been examined either in relation to the total current and projected personnel requirements for vocational education, or the new roles and relationships that are implied. In examining alternative structures we must consider the essential interfaces that must be made by vocational teacher education to the college or university community and to the community-at-large. Davies (1970) has pointed to the need for a transition away from ". . . primarily short-term, exclusively college-based training to long-term programs that involve partnerships among colleges and universities, state and local school systems, and the community to be served by the personnel to be trained."

The data base for studying the problem of the organizational structure for vocational teacher education is practically nonexistent. A library search and a search of the Educational Resources Information Center (ERIC) system has not revealed studies or supporting literature with a central focus on alternative organizational structures for vocational teacher education. Further, no classification of the existing types of organizational structure for vocational teacher education on college and university campuses could be found.

A Rationale for Organizational Structure

In establishing the rationale for organizational structure in vocational teacher education, it should be axiomatic that "form follows function;" that is, the purposes for which an organization exists should dictate its structure. Yet, it is observed that colleges and universities with similar missions, departments having comparable goals within these institutions, and state departments of education with like responsibilities, all organize differently despite similar functions. What real differences in *output* occur solely because of their organizational structure? This gives rise to another question as to the amount of variance in the performance of graduates that is attributable to the administrative structure of the unit primarily responsible for their preparation. Can one (or *when* can one) identify critical performance elements in vocational education leadership and significant differences that are attributable primarily to administrative structure in vocational teacher education?

Organizational structures are often "legitimately" altered to more efficiently and effectively administer processes presumed to be "good," but which are untested against output variables. Since the performance differences attributable to organizational structure have not been specified, perhaps the reasons have been to harmonize with other college or university, state department of education, and local district structures.

If the concept of "form follows function" is viable, it is essential to identify the functions of vocational teacher education. Its functions are to determine the need for recruiting, selecting, preparing, and maintaining professional performance of personnel in diverse roles and levels of professional responsibility in vocational education. In essence, " . . . programs of such character and efficiency as are needed to provide an adequate supply of qualified teachers and other vocational education personnel" (*Administration of Vocational Education,* 1966).

Since there is multi-institutional involvement in vocational teacher education (i.e., state departments, college or university, local districts may all be involved), we should examine the unique capacity of each of these agencies to contribute to the effective fulfillment of these functions. This will help to establish their individual roles and ultimately their organizational structure. However, one is again reminded of the obligation of the college or university to think in terms of personnel development, research, and related responsibilities which may transcend the responsibilities inherent in responding to federal legislation for vocational education.

What, then is the overall *role* or mission of the several major agencies in vocational teacher education? Evans (1968, p. 96) has suggested a simple division of labor. He recommends that "in higher education we should assume primary responsibilities for preservice education in vocational-technical education and assist other people with inservice education, and local districts should assume primary responsibility for inservice education, and help higher education with preservice education. Over all, the state (division of vocational education) as a fiscal and planning agency should take responsibility for determining that there are adequate provisions for preservice and inservice education. And, the state should also assume responsibility for insuring that desirable innovations have occurred."

Another insight into the division of labor comes from the President's Panel of Consultants on Vocational Education. They reported that, "Final responsibility for federally reimbursed teacher education programs rests with the State Board for Vocational Education. Ways of meeting this responsibility vary from state to state. During the year 1960-61, 40% of the states carried out their teacher-training responsibility through existing teacher education institutions; 38% of the states met the responsibility by the joint efforts of programs conducted by the State Board for Vocational Education and by one or more teacher education institutions; 19% followed a system which involved the State Board for Vocational Education, a teacher training institution, and a local board of education. The remaining 3% of the states followed combinations of these plans" *(Education for a Changing World of Work,* 1963, p. 52).

Alternate Strategies for Studying the Problem

One approach to comparing alternative structures is the identification of generally accepted principles of organization and management and the comparison of alternative structures in relation to these principles. In this connection, there exists the real question of whether these principles of organization and management, derived in the main from industry and the military, apply to academia. An alternative approach would be to identify the established functions of vocational teacher education departments and compare alternative structures on the basis of their facilitating the effective execution of those functions. Unfortunately, both approaches lean heavily on process criteria; that is, a set of conditions are assumed to be desirable and, when applied, ultimately lead to the development of a superior educational product.

Time, space, and resource constraints did not permit an exhaustive application of either approach. The approach followed in this discussion, therefore, might be characterized as an eclectic, rationalistic approach; that is, an attempt to identify and examine alternative structures and to indicate some of the major advantages and disadvantages of the alternative structures in terms of both approaches. The difficulty in determining what real differences, if any, are attributable primarily or solely to the organizational structure and its interacting variables is acknowledged.

Organizational Patterns of College or University-Based Vocational Teacher Education

Recognizing that many formal and informal variations exist in vocational teacher education, classification is extremely risky. A simplistic grouping, primarily on the basis of unification and centralization of adminstration, with consideration of the disciplinary locus on campus seemed most reasonable. The following four groups represent the general distinctions in structure which presently exist.

Integrated Organizational Structure

A single administrative unit which is a subordinate element or department in a school or college of education or of technology. All or nearly all of the vocational service areas and supporting services are represented and operate as an integrated unit under one chairman or department head. (Academic titles for staff and course titles reflect this integrated or unified approach.)

Confederated Organizational Structure

All or nearly all of the vocational education service departments are represented on the campus but are independently organized. A campus-wide coordinator or chairman provides general leadership. The individual service departments are in *either* schools or colleges of education *or* in schools or colleges representing the occupational areas; e. g., agriculture, business and commerce, home economics, etc. There is a formal mechanism for coordinating selected activities while preserving some independence and autonomy of individual units.

Independent Organizational Structure

Each individual vocational service-oriented department is organized and operated independently. Departments or programs may be located in schools or colleges of education *or* in occupationally oriented schools or colleges. There is no formal mechanism for overall coordination.

Independent — limited offerings: Only a single or a limited number of service areas are represented on the campus.

Independent — multiple offerings: All or most of the service areas are represented on a single campus.

Diffused Organizational Structure

Vocational education personnel are part of relevant general education departments; e.g.; secondary, curriculum, adult, science. No formal structure exists for vocational teacher education.

Comparison of Administrative Structures for Vocational Teacher Education within Colleges and Universities

In viewing the preceding four general "classes" of organization, the *independent structure* (probably the most common of the four) has the least to commend it. When the total vocational program needs for personnel development are considered, this fragmented structure does not have the capacity to effectively fulfill education requirements for leadership positions which cut across vocational service area lines. Further, because of their "isolation," the desired broad perspective of the total program of vocational education will likely be restricted. The only exception is the occasional situation where a strong institutional and school or college commitment results in producing competent, occupationally oriented teachers in a single service area. Even then, the separation from other elements of vocational and general education would seem to impose severe limitations in program and in cost effectiveness.

The *diffused structure* errs in over-compliance with a unified approach to education. It does not provide a means of organizing the "critical mass" of talent and resources needed to cope with current and emerging problems in vocational teacher education. It lacks a formal means of directing essential inputs toward the development of personnel for a total vocational program. Its primary commendation is its interface with the general, professional education community.

The integrated and confederated structures merit more extensive comparisons. In terms of organizational principles, the *integrated structure* provides those advantages associated with organizational efficiencies such as flexibility in resource allocations, economies of scale, and cost effectiveness. Presumably communications and coordination within the vocational education and general educational domain are enhanced. Decision-making relative to total program, staffing, and related concerns is facilitated. Programmatically, the integrated structure could provide the most effective means of developing and providing "general" vocational education and for attacking program-wide problems through curricular studies, research, and development.

Instruction should be enhanced through coordinated planning and programming, team teaching, and developing horizontal (process) staff specializations in fields such as counseling, manpower research, and administration. It would seem that a broader philosophy and enriched perspective concerning vocational education as contrasted to an occupational education area would be developed under this integrated structure; but channels of communication and coordination with the subject matter colleges and departments would be extended (sometimes to the breaking point) unless the unified department were in a single school of technology which was responsible for agriculture, business, home economics, health, and industrial programs of the university. All of these advantages and limitations would appear to operate in the preservice and inservice programs as well as in related curriculum development.

With respect to optimizing the functions of teacher education programs, it would appear that the integrated structure within a school or college of education provides strengths in pedagogy as contrasted to the subject matter (teaching content) dimensions of professional preparation. For example, vocational student personnel services could be centralized, a broader range of integral offerings could be provided, and the student's optional career ladders and placement alternatives in the educational field would be optimized (as contrasted to placement alternatives and career lines in a single occupational specialty). Recruitment efforts might not be as strong as in occupational areas, but should be stronger from related educational areas, e. g., curriculum, research and evaluation.

In an integrated structure, communications and interaction with the state department of education should be simplified. Vocational educators might have a bigger "voice" on the campus through their cohesiveness, but regrettably their support from technical colleges (the colleges of agriculture, business, etc.) and their clientele groups (e.g., business, industry, and agriculture groups) would probably diminish. In essence it appears that optimal linkages in the educational dimension, i. e., a unified department in the school or college of education, might be achieved at the expense of extended lines of communication, coordination and support from the technical colleges in other parts of the college or university.

Some of the informal advantages inherent in the professional vocational education domain would be functioning in reverse in the technical subject matter domain if the unified department were in the school of education. That is, the likelihood of strong subject matter department participation would be reduced at the same time that the interface with the total area of vocational education and related general professional education would be enhanced. In either case, the disadvantages would appear to be more applicable to baccalaureate-oriented preparation programs than to graduate programs or nonbaccalaureate type vocational teacher preparation programs. Graduate programs tend to have less emphasis on technical subject matter and in the nonbaccalaureate-oriented program the individual presumably "brings" the necessary technical competencies to the preparation program. Perhaps then the major beneficiary of the unified structure would be graduate programs where personnel preparing for advanced leadership positions (e. g., state and local administrators, teacher educators and researchers) need an in-depth perspective of the total program, where specialized programs for teaching the disadvantaged and the handicapped were emphasized, and where one or two courses in vocational education could be offered to individuals specializing in general school administration, guidance and counseling, and so on.

In some respects the *confederated structure* represents a point midway between the integrated and independent organizational structures. Organizationally, it could draw on strengths from orientation to, and affiliation with, both schools or colleges of education and technology, depending upon where the subelements of centralized structure are administratively housed. The strengths and weaknesses in linkage and performance as they relate to education and to the technical units of the college or university would appear to be basically the same as those identified in the analysis of the integrated structure. That is to say, when subelements are located in schools or colleges of education, they tend to optimize educational linkage; and when they are located in the technical colleges, they tend to optimize the occupational linkage. The critical factor in this structure is the nature of the *formal coordination mechanism*. It could represent an explicit college or university policy and an effort to coordinate and unify on essential program elements while maintaining linkages within the college or university, or it could represent merely mutual coexistence and tolerance. The individual to whom the person designated to provide leadership and coordination, will report is important, as are his or her responsibilities and authority as it affects budgeting, staffing, planning and programming, interfacing with the college or university and the state department of education. Whether the coordinator is concerned with the total spectrum of personnel development in vocational education or with only some aspects of it is also a critical factor.

Decision-making on fundamental problems and issues could be tortuous in contrast to the integrated structure. The involvement of more than one major school or college unit (hence, several budgets, personnel policies, and committees), could delay decision-making and programming.

Several universities have adopted a confederated structure for undergraduate programs and an integrated structure for graduate programs. This may be a transitional step toward an integrated (unified) structure, which could not be

Table 6-1

College or University Organizational Structures for Vocational Teacher Education

Type of Departmental Structure	Service Area Composition	Administrative Head	Characteristics
Integrated	All or most service areas	Single department head or chairman	A unit within a college of education or a school of technology. All vocational service areas and supporting services under a single administrative unit with a chairman.
Confederated	All or most service areas	Campus-wide coordinator or chairman	All or most service areas are independently organized on a single campus. These service areas may be located in several colleges on one university campus. An institution-wide coordinator or chairman provides general leadership.
Independent			
(a) Limited	One or a few service areas	Independent department heads	Only a single or limited number of service areas on a campus; each program operating independently.
(b) Multiple	All or most all service areas	Independent department heads	Only a single or limited number of service areas on a campus; each program operating independently.
Diffused	One or more service areas	The relevant department head in a general education department	Vocational teacher education personnel are located with relevant general education departments. No formal structure exits for vocational education.

accomplished at once. Or, it may be a recognition of the strengths and weaknesses of each of the two structures.

Organizational Structures for Vocational Teacher Education in the State Division of Vocational Education

The state division of vocational education occupies a key role in the responsibility for vocational teacher education. As the primary state agency for the disbursement of federal vocational education funds under the Vocational Amendments Act of 1968, the state division of vocational education is responsible for the maintenance of minimum standards in vocational education programs and vocational teacher education programs which receive federal funds. More precisely:

> The State board shall provide for such training (both preservice and inservice) as is necessary to provide qualified personnel meeting the requirements of the State plan pursuant to S102.38. Such training shall be sufficient to provide an adequate supply of qualified teachers and other personnel, including those capable of meeting the special educational needs of disadvantaged and handicapped persons in the State. (*Federal Register*)

The degree to which state divisions of vocational education support, control, and provide leadership and direction for vocational teacher education varies greatly between the states. For example, the state division of vocational education may invest most of its teacher education funds in the reimbursement of faculty salaries at teacher preparation institutions; or it may reimburse the teacher education institution for only those "added costs" for preparing vocational teachers as opposed to teachers of other disciplines.

In some cases the college or university offering the teacher education service may provide all of the basic support for vocational teacher education just as it supports elementary and secondary teacher education. In this case, the funds of the state division of vocational education may be used to support innovative programs, special projects, and provide "seed" money for redirection of existing programs. This alternative of selective teacher education investments seems to be the most logical and viable funding structure for vocational teacher education, if, as Evans suggests, the state division of vocational education is to provide maximum leverage for program change and direction (Evans, 1968, p. 96).

Still another alternative for supporting vocational teacher education is a planned phasing out of support from the state division of vocational education over a period of years. Initial funding could help establish and operationalize the program with a gradual transition of the support from the state division to the college or university according to a preagreed schedule.

When vocational education funds, administered by the state division of vocational education, are expended for teacher education services, the state division enters into a contractural agreement with the teacher education institution for those services. As the contractor and approving agency for vocational teacher certification, the state division of vocational education can exert direct influence on the state's vocational teacher education structure.

Frequently, teacher education for part-time and adult vocational teachers is conducted by representatives of the state division of vocational education by means of conferences and short, intensive courses. Some local school districts maintain teacher educators for vocational teachers of out-of-school classes and other teachers who are in need of professional preparation (Roberts, 1965, p. 157). The state division of vocational education can serve as the catalyst to effect these cooperative inservice teacher education programs conducted by the local school district through adjunct faculty appointments to the college or university.

Preservice vocational teacher education can most logically be conducted through existing institutions of higher education; however, inservice teacher education should be the primary responsibility of the local districts who employ the teachers and who are most acutely aware of the professional development needs of their staff. For the local district to accept this responsibility, it must have the active support of institutions of higher education (see Chapter 4).

Many state divisions of vocational education are coordinating the state's vocational teacher education services through a full-time staff member. The person in this staff position provides leadership and coordination to the planning, organization, supervision, and evaluation of teacher education activities for all vocational areas. This person further serves as liaison between the state division of vocational education and the cooperating vocational teacher education institutions and agencies. (Ideally, one person should represent each of these institutions.) The state division staff member can also coordinate the total array of professional personnel development programs, both state and locally funded programs, and special federally-funded programs, such as training grants under the Education Professions Development Act (EPDA). In effect, such a person on the staff of the state director of vocational education can provide the necessary coordination to articulate an otherwise fragmented program of vocational teacher education.

Another administrative dimension to enhance the statewide coordination of vocational teacher education is the establishment of a state coordinating council for vocational teacher education. This council should be composed of representatives from various institutions engaged in vocational teacher education throughout the state (see Chapter 7). Its purpose is to articulate and coordinate teacher education program development across the vocational fields and work toward the improvement of teacher education services in the state. The council can contribute to long-range statewide planning, the elimination of unnecessary duplication, and the development of essential specialized programs. The state division of vocational education staff member in teacher education is the logical person to serve as executive secretary of the state coordinating council for vocational teacher education.

Consistent with the division of labor cited earlier, the state should exert leadership in establishing current and long-range personnel needs. Special attention should be given to assessing the quantitative and qualitative adequacy of the ongoing teacher education program. The state advisory council on vocational education is charged with evaluating effectiveness of vocational education programs. The adequacy of teacher education obviously comes within their purview. Some clash may occur between the state advisory and coordinating councils, and this may have its advantages. For example, the parochial interests of the coordinating council and its members and the inability of the advisory council to see the total scope of teaching problems may, in effect, provide for a better teacher education program.

Administrative Structures in Local Districts for Vocational Teacher Education

The local school district has a vital role to play in the overall state program of vocational teacher education. Local districts, both large and small, can provide meaningful internship experiences for student teachers and for neophyte administrators. Such cooperative programs with the teacher education institutions provide the local district with one of many opportunities to supply corrective feedback to the college or university. Deficiencies in the preservice training of interns may be noted by appropriate local district supervisory personnel and systematically reported to the preparatory institutions. Or more desirably, local supervisory personnel should specify the performance needed by interns in precise behavioral objectives so that these objectives might be used by teacher education institutions to structure their programs.

Local districts should express to the state division of vocational education their specific needs for personnel to fill new and emerging roles. The state division of vocational education should, in turn, collate and verify these needs and direct its leadership and resources toward seeing that personnel needs for new and innovative programs are satisfied.

The new "Career Opportunities Program" (COP) represents a radical departure from traditional teacher education programs. It attempts to give major responsibility for educational personnel preparation to local school districts instead of to colleges and universities; and, to the extent that this can be accomplished, it provides the local district with the power or option to buy from teacher education institutions packages and programs it decides are significant and to reject others (Davies, 1970).

Large local districts employing scores of vocational teachers also have the potential and responsibility for conducting their own inservice education programs. It is not uncommon in a large district for the district to maintain its own vocational teacher education staff. These staff members, totally supported by local district funds, may hold adjunct faculty rank with vocational teacher education departments at appropriate colleges or universities within the state. With its own inservice teacher education capability, the local district is able to employ nondegreed teachers and provide approved professional course work in a deliberate and systematic personnel improvement program until its teachers are properly certified. Further, it may provide a limited amount of graduate credit courses for advanced inservice credit.[1]

Small local districts that are adjacent to, or are satellites of, larger districts may conduct inservice personnel development programs by utilizing the inservice teacher education capability of the larger district. In this case, the smaller participating district should share the pro rata cost for the education of its personnel.

The local district, working cooperatively with teacher education institutions; the state division of vocational education; and the state certification agency can provide the key ingredient for the operation of a career ladder in vocational teacher education. When the various activities in the vocational education instructional system have been adequately described and differentiated, a system of differentiated staffing may be utilized by the local district. The local district is the key agency in recruiting the personnel for these differentiated roles, for providing suitable and appropriate employment for the paraprofessionals within the system, and providing opportunities for systematic career progression so that the eventual attainment of a professional level teaching position is possible. The teacher education institutions work cooperatively with the local district in providing suitable inservice course work for career development, while the state division of vocational education assists in providing the appropriate input and guidance for needed certification. Examples of these kinds of programs may be in many of the major cities throughout the United States.[2]

Financing Vocational Teacher Education

During the past several years, the states have made a considerable effort to improve the quality of vocational teacher education programs through recruitment and education of new professional personnel and the upgrading and advancement of present staffs. This has been accomplished through a variety of regular preservice and inservice teacher education courses, seminars, institutes, and internship experiences. However, while this personnel development effort has increased, the percentage of total vocational education funds spent on teacher education has remained nearly constant.

During fiscal year 1967, approximately 14.3 million dollars were spent on vocational teacher education. This includes local, state, and federal contributions (U.S. Dept. HEW, 1969, p. 52). During fiscal year 1969, approximately 20.5 million dollars were spent on teacher education (U.S. Dept. HEW, 1970, p. 7). However, in both cases the expenditure represents approximately 1.8% of the total federal, state, and local funds expended for vocational education that year. With the rapid national expansion of vocational education, the percent of total expenditures allocated to teacher education should be increasing if personnel are to be prepared to meet projected manpower needs.

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[1] The Miami-Dade Public School District in Dade County, Florida, provides an example of such a program.

[2] Examples of programs of this type may be found in Cincinnati, Cleveland, Minneapolis, and in New York City.

From the perspective of history, personnel development in vocational education has been severely neglected. Although regulations on funding were permissive, policymakers apparently chose *not* to make the levels of investment needed to develop adequate personnel programs.

There is adequate evidence that critical shortages of personnel have hampered the full development of vocational programs. Evans has indicated that in the periods of rapid vocational education expansion, during which crash programs of vocational teacher education are usually generated, vocational teacher education is entering and competing in the labor market with business and industry at the wrong time; for they also are expanding and paying high wages (Evans, 1969).

Until adequate funding is available to support the total spectrum of personnel development, some of the abiding problems of vocational program development will remain. These include such problems as (1) lack of education for personnel to work with the disadvantaged, (2) lack of program data upon which to build new programs, and (3) a shortage of administrative leadership personnel (U.S. Dept. HEW, 1969, p. 137).

While the program of inservice training and staff upgrading should be increased at the local level, the local districts cannot be expected to bear all of the increasing program costs. An equitable share of these costs should be borne by the state.

The governance of vocational teacher education is diffused; therefore, it is extremely difficult to secure firm agreement on needed personnel priorities. Furthermore, the funding sources are diffused through several areas of the Vocational Amendments Act of 1968, the Education Professions Development Act, the Manpower Development and Training Act and other sources; hence, it is difficult to focus investments on vocational teacher education needs. Funding for vocational teacher education in all of its aspects is fragmentary and grossly inadequate. There is urgent need for an extensive system of fellowships and cost-sharing to adequately support personnel development. The Canadian Government for example, has evolved systems whereby personnel costs are shared among the national government, the provincial government, the institution offering the training, and the potential employing institution.

Summary

While there is not extensive evidence confirming the alternatives described in this discussion, the following conclusions seem warranted.

General Conclusions

1. There is more evidence that the advantage of an integrated organizational structure of vocational teacher education within the college or university setting is successful in optimizing inputs than that there are significant differences in outputs attributable to alternative structures. Also, there is a growing body of knowledge to indicate that there are a number of common elements in the preparation of professional personnel which could be taught in a general program, thereby improving cost effectiveness and broadening the philosophy and perspective of personnel.
2. The optimum organizational interface between vocational teacher education and education may be at the expense of the interface with the technical content areas. This is more true in baccalaureate-oriented programs than in graduate programs or nonbaccalaureate-type vocational teacher preparation programs.
3. The potential benefits accruing from an integrated teacher education structure appear to be greater for graduate level instruction than for undergraduate programs.
4. There is virtually no empirical evidence to support one organizational structure over another. Further, alternative structures seem to function with comparable effectiveness in fulfilling some functions. Perhaps this indicates that organizational structure accounts for a small amount of variance in graduate performance.
5. Historically, personnel development programs in vocational education have been impoverished. A lack of adequate investments in vocational teacher education and related areas have severely restricted the adequate and effective development of vocational programs.

Recommendations

As a means of alleviating some of the problems discussed in this paper, the following recommendations are made:

1. That a systematic, long-range series of studies be undertaken to identify performance measures needed by professional personnel in vocational education and to verify differences based on organizational structure.
2. That established and emerging concepts in organizational theory be examined with a view to their application in vocational teacher education.
3. That state departments of education and colleges and universities clarify the mission of vocational teacher education programs and examine alternative statewide structures for most effectively fulfilling this mission; again recognizing the obligation of colleges and universities

to provide leadership and services that go beyond responding to federal legislation for vocational education.

4. That the state department of education exert leadership in clarifying institutional roles and relationships and provide current and long-range planning information. The designation of a full-time staff member for coordinating and facilitating vocational teacher education programs is also needed.
5. That there be established a state-wide coordinating council for vocational teacher education with institutional membership.
6. That colleges and universities providing vocational education programs seriously examine their existing organizational structure and their mechanisms for facilitating programwide communication and coordination.
7. That local districts provide basic leadership and support for inservice education and design professional upgrading experiences for vocational teachers employed in that district.
8. That through the several funding sources available to support vocational personnel development, additional monies be made available to further develop and extend needed programs, supporting research, and curriculum development.

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7 Chapter

The Context of Vocational Teacher Education

by Robert E. Taylor and Aaron J. Miller

Introduction

Vocational teacher education is accountable, in varying degrees, to many institutions and agencies. The organizations which typically have some jurisdictional interest in teacher education include state divisions of vocational education, state colleges and universities, state boards of regents or of higher education, state boards of community colleges, and to some extent, local school districts. In part because of the poor articulation among these somewhat independent institutions, teacher education has functioned with vague and nonoperationally-defined goals; and when engaged in assessment, it has been enamored with assessing inputs or processes as contrasted to outputs or products. These limitations are incompatible with the development of a comprehensive and responsive, self-correcting system.

In viewing vocational teacher education, one may conclude that it resembles a "nonsystem." While it has some of the characteristics of a total system, it is more aptly characterized as a confederation of several small subsystems which are essentially unrelated to larger external systems. This decentralized aggregation and the delicate equilibrium maintained with each of the external systems tends to make it lethargic in making needed changes. Most importantly, the governance of vocational teacher education is so diffused that decision-making is tortuous, erratic, and frequently nonrational. This situation poses severe limitations for a total systematic effort for professional personnel development in vocational education attuned to evolving program needs. Vocational education programs must be in harmony with socioeconomic, manpower, and political needs. They must be able to effectively serve individuals well and, in so doing, serve society.

Because the vocational teacher education program finds itself as an inadvertent gatekeeper in the improvement and redirection of vocational education, it must be sensitive and responsive to new needs and directions in occupational education as it serves social and individual needs. The total vocational education program must be capable of regeneration and self-renewal. This can be accomplished by a systematic program of leadership personnel development which includes teacher education.

If the myriad of components in vocational education are considered one of the most strategic elements in the introduction of innovation and change should be the teacher education process. Paradoxically, this element also seems to have strong inertia and great capability for resisting change.

The Governance of Teacher Education

In any attempt to study systematically the various elements of vocational teacher education with a view toward improvement, it is essential to examine the broader educational context within which the program functions. One of the primary concerns of teacher education is with the process of systematic regulation, authoritative direction, or simply control; more specifically, concern for program-wide decisions that are consistent at all levels; for the identification of major requirements; for the determination of responsibilities, roles, and processes that need to be actuated; and assurance of optimal participation and contribution of various program elements. If, for example, there are specific research findings that imply new modes of operation or organizational patterns, what agent or agency determines the appropriate means (decision process) for reaching a decision on implications of the findings and initiates action to assure installation?

At this point one is forced to conclude that it seems impossible to explain totally the present governance or control of vocational teacher education. However, an attempt will be made to identify and describe some of the *major* power forces or jurisdictional spheres which operate and interact to control vocational teacher education. Any one of these jurisdictional spheres may function independently to constrain or inhibit change, but individually they have neither the power, resources, nor in many instances, the inclination to *assure* that needed change will occur. Positive, cohesive interaction of these forces is essential to effect needed change.

Jurisdictional Spheres

There are a number of forces within jurisdictional spheres which tend to provide "stability and continuity" for vocational teacher education. The following externally-oriented major "forces" may facilitate or inhibit desired improvements, depending on *their* governance. In any event they will have to be considered in any deliberate attempt to effect major renovation of vocational teacher education.

Certification

Certification requirements for teachers in nonvocational areas of education such as English or mathematics are typically consistent for subject fields within and among states. In vocational education, there is great diversity in certification standards and requirements among vocational service areas within most states, and certainly among states. For example, certification requirements are different for trade and industrial teachers, distributive education teachers, and vocational agriculture teachers within the same state. Furthermore, great variations exist among states in certification requirements for a single service area, such as trade and industrial education (Cotrell, 1970). The situation unique to vocational teacher certification is that teachers must be certified as to their occupational proficiency as well as their ability to teach. Certification standards for vocational teachers frequently are based upon the completion of several years of occupational experience. While a uniform requirement of a given number of years of occupational experience may be appropriate for some teaching candidates, it is surely an inadequate or an excessive requirement for others. However, such a requirement is presently easier to administer than the examination of teacher candidates on the basis of actual skills required for the job.

There are areas of vocational education where teachers have no state certification requirements, yet these programs appear on a par with their counterparts which use certified teachers. These noncertified programs include adult evening programs and short-term intensive "manpower" type programs. In these noncertified programs, vocational teachers are chosen mainly on the basis of their acquired technical skills. They are, in effect, "certified" by being employed to teach. These programs have a clear advantage of being able to recruit teachers with current technical skills from a large, mobile industrial labor pool. This initial flexibility should be a hallmark of vocational education programs. However, outdated and unrealistic certification requirements provide a barrier to this alternate.

Vocational teacher education services which are designed to serve the needs of a variety of disadvantaged groups must be increased. Present vocational teacher education programs, for the most part, have not been completely effective in this regard. If these groups with special needs are to be adequately served, a variety of new kinds of teaching roles must be filled. Many of these teaching aide or paraprofessional positions may be filled by members of the community being served. If this is to be accomplished, existing rigid teacher certification requirements must be changed (Essex, *et al.*, 1968, p. 276).

In addition to preparing paraprofessionals for the somewhat conventional roles such as teacher aides, there may be a need for paraprofessionals to work in educational problem areas complementary to the classroom instructional process. This might include such roles as program planners to assist students in their occupational planning, program evaluators to assist in assessing the outcomes of the program, and community-needs analysts to provide a liaison between the community and the school by interpreting and converting community needs into tangible program components.

While certification of some type is desirable and perhaps essential to the maintenance of minimum educational standards and quality, existing certification requirements have sometimes ceased to be designed to assure quality and effective professional performance and are used to limit entry into the teaching profession. Perhaps the state of vocational teacher certification may best be summarized by acknowledging it as a force with which to contend, and by recognizing that certification requirements, while difficult to change, must be intelligently examined and modified.

Another facet of the problem is provided by the philosophy of institutional accreditation by professional agencies such as the National Council on Accreditation of Teacher Education (NCATE). Institutional accreditation by such an agency means that " . . . the institution and the program of preparation have been evaluated by an agency established for the purpose by the profession and have been certified as meeting its standards" (Kinney, 1964, p. 92).

Accreditation by NCATE is based upon such things as institutional objectives, administration of the preparation program, student personnel policies, professional course sequences, quality of staff, professional laboratory experience, functionally compatible with occupational experience criteria designated by state divisions of vocational education. In any event they are primarily concerned with "process" criteria.

State Agency Approval of Teacher Education Personnel

Another force which may contribute to inertia and resistance to change in the organizational structure of vocational teacher education lies in the approval of teacher educators by a department of state government. The teacher educators most frequently approved by state divisions of vocational education are those with a historical background in some traditional vocational service area. This makes it extremely difficult to bring into teacher education faculties members with special expertise, but who have backgrounds in "nonvocational" areas. In the total area of teacher education, which includes the training of teachers for all levels and areas of public education, only vocational education requires that teacher educators be approved by some division of the state department of education (Evans, 1968, p. 96).

Generally, this requirement is viewed by most college and university personnel as being onerous and as not promoting responsiveness to change where there is a lack of leadership and operational goals from the state department of education. However, state agency approval of teacher education personnel may provide positive pressure and direction for change if the state agency exerts leadership toward explicit program goals.

Teacher Organizations

A growing force that is providing increasing rigidity to the system of vocational teacher education comes from the milieu of professional teacher organizations, unionism, collective bargaining, and contract negotiations. In times past, program redirection and change could be affected through the individual teacher or through administrative direction. This is not necessarily true in today's setting. In an increasing number of school systems, change in any educational program, including vocational education, which necessitates substantial redirection or redistribution of the time of teachers who are working under a negotiated contract, must be a part of the collective bargaining agreement. In fact, certain conventional teacher training arrangements such as the use of student teachers serving under the tutelage of supervising teachers must now be negotiated as part of the collective bargaining agreement. Under these circumstances, adoption of new practices may be more a function of political power and economic trade-offs than the results of a rational consideration of student needs. With this constraint, teacher education departments may be reluctant to promote innovative teacher performance which stands little chance of approval in future negotiations.

Another force which binds vocational teacher education to tradition is the organizational structure of most professional vocational education organizations. The membership structure of these organizations is generally divided into traditional vocational service areas. This tends to preserve an organizational rigidity which negates a logical movement toward vocational teacher education programs which provide greater utility by cutting across service areas.

College and University Promotion and Reward Policies

There is frequently a role conflict for vocational teacher educators who perform in the college and university settings. As a faculty member, rewards in terms of advancement in faculty rank, salary, and professional recognition are based primarily upon the teaching of resident academic courses, graduate student advisement, participation on college committees, research, and publications. However, within the total program of vocational teacher education, one of the most critical needs is inservice education for vocational teachers. This includes relevant professional courses and short courses in new technological theory and methods that will update technical expertise. Unfortunately, many of these technical courses do not have the academic respectability of those carrying college credit; and unfortunately, for the college or university faculty member engaged in vocational teacher education, participation in this kind of "nonscholarly" inservice training seldom brings professional reward or promotion (see Chapter 4 for further discussion of related problems).

To help solve this problem, a limited number of colleges and universities have developed a dual system for academic recognition; one is based upon teaching performance and service, and the other uses traditional criteria. Faculty promoted under either set of criteria receive the same academic recognition and professional rank.

Local School District Policies

Local school districts' traditional personnel policies, which reward teachers for accumulated college credit hours and tenure on the job rather than teacher performance, have a stultifying effect on innovation in vocational education.

One of the greatest problems in vocational education is that of keeping teachers up-to-date in their field of technical expertise (Miller, 1967, p. 15; Evans, *et al.*, 1969, p. 48). Specialized inservice courses for cooperative summer employment in business or industry for vocational teachers could substantially reduce this problem. However, as mentioned earlier, these kinds of inservice upgrading experiences generally do not qualify for college credit.

In most local school districts, teachers' salary-schedule advances are based upon the accumulation of additional college credits and tenure on the job, rather than performance. Also, a teacher's state certification renewal is often based upon his or her successful accrual of a minimum number of additional college credits during the term of the certificate, regardless of the appropriateness of the courses taken (Allen and Mackin, 1970).

Even if teachers are convinced that technological updating is necessary to provide relevant instruction, they cannot be expected always to put aside financially rewarding activities to invest their time in upgrading activities that will not be financially rewarding. Further complicating the problem are state and local teacher tenure laws which protect a teacher from discharge even though the teacher's technical knowledge is hopelessly outdated.

Increased Student Participation

Recent trends toward increased student involvement and participation in the many facets of campus life may also provide a refreshing perspective and potential force for improving vocational teacher education. Viewed positively, it could provide both instant feedback and a vehicle for creating greater student responsibility for his own self development which might be expected to continue after preservice education has been completed.

Trends

There are a number of trends in vocational teacher education brought about by the various forces and jurisdictions previously described. Others have been effected as a natural response to the evolution of many diverse social needs. Whether these forces and trends are positive or negative to the future of vocational teacher education remains to be seen. In any event they must be considered by those interested in improving vocational teacher education.

Use of Instructional Technology

There is a trend toward greater utilization of technological support in the teacher education process (Lagomarcino, 1970). This has been brought about by the desire of teacher educators to improve the learning environment and to prepare better teachers, and also by pressure to minimize the per-unit cost of teacher education. One example of this utilization of technical support is the increased use of video-tape equipment in the teacher training process. Using video-tape, techniques have been developed that allow teacher educators to supervise more effectively more student teachers than was formerly possible through personal contact alone.

Other technological advances which support vocational teacher education include closed-circuit television, a variety of audio-visual devices for classroom use, the use of computers and remote terminals connected to centralized computer installations, and the availability of extensive laboratory training models which simulate the operation of the latest equipment used by business and industry.

Curricula Based on Performance Criteria

Studies indicate that as educational curricula, including vocational education curricula, are organized into small, discrete learning units or modules based upon performance goals and objectives, and as these modules are supported by technical devices that support the teaching process, the need for formalized teacher preparation in classroom instructional skills diminishes (Popham, 1968). In fact, there are data which indicate that when a vocational curriculum is optimally organized, the need for a traditionally trained teacher is substantially diminished. This suggests the use of paraprofessionals, teacher aides, and other such personnel in a pattern of differentiated staffing. However, curriculum development of this type is costly; and it is questionable whether greater curriculum organization coupled with differentiated staffing results in any reduction in training costs, although it may provide a more adequately trained student. Furthermore, rapid changes in the occupational technologies may pose limitations to such extensive curricular developments. Nevertheless, research may provide an indication of the proper balance of educational resources to be applied to curriculum development or teacher education for optimum learning.

Demand for Social Relevance

Another perceptible trend is the frequency with which new and legitimate demands are made upon vocational teacher education faculties to provide services and training for vocational teachers to function in special groups. This should not be confused with differentiated staffing or the differentiation of roles within the educational process. The functional preparation of teachers includes the preparation of teachers for special post-secondary institutions, teachers for the disadvantaged or for groups with special needs, and teachers for urban ghettos. The public school system, from preschool through post-secondary levels, has been designated by society as an instrument for positive social change. Because vocational teacher education is an integral part of this system, there is a clear mandate for vocational teacher educators to respond to individual and societal needs and to adjust curricula, training methodologies, and techniques to meet these functional needs.

New Roles to Be Served by Teacher Education

With the pressures for greater economy in vocational teacher education coupled with the demands to meet the needs of new clientele groups in diverse and dynamic social settings, it is imperative that vocational teacher education programs train professionals and paraprofessionals to perform in new roles, and that they adjust, modify, or redirect the vocational teacher education structure as necessary to train workers for these new roles (Allen and Wagsehal, 1969). No longer can vocational teacher education systems limit their efforts to training teachers for the secondary schools.

Teacher education in general has not been insensitive to these new personnel demands. Dozens of examples are available where teacher education agencies, cooperating with public school systems are training and utilizing teaching aides and paraprofessionals. These persons often function to perform menial tasks and seldom are trained or allowed to perform a variety of limited but highly specialized segments of the teaching process (Grambs, et *al*., 1970). The vocational teacher education establishment in consort with other groups must build on a base of defensible research to develop a training potential for differentiated staffing that includes critically needed specialists such as curriculum planners and developers, evaluators, laboratory instructors and supervisors, community relations catalysts, as well as classroom support personnel.

Increased Need for Post-Secondary Teachers

One of the interesting educational phenomena of the past decade has been the burgeoning increase in enrollments in community colleges and similar post-secondary institutions. A substantial portion of these enrollments has been in vocational and technical education programs. Annual report data from the U. S. Office of Education indicate that this trend will continue with post-secondary vocational education enrollments increasing by 10% by 1975 (U.S. Dept. of HEW, 1969, p. 84). Accompanying an increase in post-secondary occupational education enrollments is the need for well-trained, post-secondary vocational teachers (U.S. Dept. of HEW, 1969, p. 86). At present, few states have certification requirements for the post-secondary occupational education teacher (Woellner and Wood, 1965). Yet these teachers need relevant teacher education services as much as their high school counterparts. It is incumbent upon the state's teacher education program to work cooperatively with the local districts or institutions in providing appropriate preservice and inservice training experiences relevant to the needs of post-secondary occupational education personnel. Similar needs and solutions apply to manpower programs; proprietary occupational schools; training programs conducted by employers, trade associations, and by groups or employees; training in correctional institutions; and, indeed to any of the newer and rapidly expanding occupational education programs.

Demand for Economy and Performance

The demand for resources to support needed public services including education always exceeds the supply of dollars which is available. This leads to intense competition for public funds and to a growing requirement for the funded agency or service to prove its benefits in terms of cost. This implies the need for a realistic and effective evaluation system that can show tangible achievement of specific objectives for a specific dollar cost (McGivney and Nelson, 1969, p. 5).

There is a growing recognition of the need to develop instruction based upon clearly identified performance. With this trend, there are a number of instances where school systems are granting contracts to private business and nonprofit groups to teach specific skills at a specified level of performance during a given time period (Lessinger and Allen, 1969; Performance Contracting . . . , 1969).

If this type of performance contracting for educational services develops into a viable alternative for educational funding agencies, the concept of performance contracting for both preservice and inservice vocational teacher education seems to merit consideration.

Summary

The most obvious implication for improving vocational teacher education is the need for a "systemic" view. Central to this is the need for improving its capacity for systematic governance, for identifying major problems, arriving at key decisions, and improving the quality of outputs. Perhaps most important is the need to improve the capacity to translate these key decisions into action programs. If all these are to be accomplished, there is a need for additional integration of the various externally oriented subsystems in vocational teacher preparation into a total state system (while maintaining desired and essential linkages to the broader social, economic, and political context).

While we decry the present loose confederation of jurisdictional spheres in the broad context, we must concede the limitations of a totally centralized vocational teacher education program and recognize the strengths of the concept of checks and balances. Regardless of the structure or structures which prove to be most successful for vocational teacher education, there is a vital need for arriving at a consensus on goals and for improving communication and coordination.

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8 Chapter

The Need for Vocational Educational Personnel[1]

by Terry G. Foran and Jacob J. Kaufman

Growth and Change in Vocational Education

Federally supported vocational education comprises the bulk of this country's education programs designed to reduce unemployment and occupational shortages. Since 1917, with the passage of the Smith-Hughes Act, the state-federal programs of vocational education have been developed on a grant-in-aid basis to states in an effort to promote vocational education. Although the original legislation specified only agriculture, home economics, and industrial trades as the programs eligible for partial federal reimbursement, subsequent legislation increased the occupational categories to include distributive occupations, practical nursing, and other allied health occupations, as well as the schooling of technicians.

The Vocational Education Act of 1963 continued the authorizations in the above-mentioned occupations and added business and office occupations. More importantly, however, this law permitted states to transfer federal funds from one occupational category to another and offered additional funds for the training of specified population groups. The groups named were high school youth, post-high school youth, adults enrolled in full-time instruction, and persons with special needs. Tables 8-1 and 8-2, which include the latest available data, showing the changing pattern of enrollment since the passage of the Act of 1963.

These tables indicate that the most rapid relative growth was in post-secondary vocational education and in vocational services for persons with special needs. From 1963 to 1969 post-secondary enrollment increased by nearly 400%. Enrollment in specific special-needs programs increased by about 460% from 1965 to 1969, the large percentage increase reflecting the low base of 1965. Further evidence of the growing trend toward educating the economically disadvantaged

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[1] *The Need for Vocational and Technical Education Personnel*, in *The Education Professions, Annual Report 1969-70*, U.S. Department of Health, Education, and Welfare (Washington, 1970), pp. 51-67. (This chapter is an edited version of this citation.)

Table 8-1

Enrollments in Federally Reimbursable Vocational Education Programs, by Population Group, 1963-69

Population Group	1963	1964	1965	1966	1967	1968	1969	Percentage Change 1963-69
Totals	4,217,198	4,566,390	5,340,611	6,070,059	7,047,501	7,533,936	7,979,366	89.2
Secondary schools	1,950,016	2,140,756	2,819,250	3,048,248	3,532,823	3,842,896	4,079,395	109.2
Post-Secondary schools	144,060	170,835	207,201	442,097	499,906	592,970	706,085	390.1
Adults	2,123,122	2,254,799	2,378,522	2,503,712	2,941,109	2,987,070	3,050,466	43.7
Persons with special needs	—	—	25,638	49,002 (53,154)[1]	73,663 (92,925)[1]	111,000 (107,942)	143,420 (114,274)	459.4[2] 171.4[3]

[1] Special needs students enrolled in regular programs.

[2] Percentage change 1965 to 1969.

[3] Percentage change 1966 to 1969.

Source: Computed from the U. S. Office of Education, *Vocational and Technical Education, Annual Report*, 1967, p. 4 and unpublished data.

Table 8-2

Relative Distribution of Enrollments in Federally Reimbursable Vocational Educational Programs, 1963-69

Population group	1963	1964	1965	1966	1967	1968	1969
Totals	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Secondary Schools	46.2	46.9	51.9	50.2	50.1	51.0	51.1
Post-Secondary Schools	3.4	3.7	3.8	7.3	7.1	7.9	8.9
Adults	50.3	49.4	43.8	41.7	41.7	39.6	38.2
Persons with Special Needs	—	—	0.5	0.8 (0.9)[1]	1.1 (1.3)[1]	1.5 (1.4)[1]	1.8 (1.8)[1]

[1] Special needs students enrolled in regular programs.

Source: U. S. Office of Education, *Vocational and Technical Education, Annual Report*, 1967, p. 4 and unpublished data.

is revealed in the increase in all special needs enrollments (those enrolled in special programs plus those enrolled in regular programs) of 63.1% from 1968 to 1969, whereas the relative increase in total enrollment was only 5.9%.

Despite the advances of special needs programs and post-secondary enrollments, secondary school and adult enrollments still represent about 90% of the total. The large relative increase in the area of special needs are somewhat misleading since all special-needs enrollments represent only 3.6% of total enrollment. Clearly there must be considerable improvement if the present status of educating those with special needs is to be consistent with current congressional intent.

Federal support for vocational education currently focuses on six broad occupational areas:

1. *Office Education*. The greatest change in vocational enrollment has resulted from the addition of business and office education to the list of federally assisted vocational programs. Enrollments in these areas increased from 731,000 in 1965 to 1,835,124, or 23% of the total in all fields, in 1969. In addition to standard secretarial training, courses are offered in data processing, communications, and personal work.
2. *Distributive Education*. This program prepares students for careers in marketing, merchandising, and related wholesale and retail occupations. Enrollments increased from 333,000 in 1965 to 563,431 in 1969.
3. *Trade and Industrial Occupations*. Enrollments in this program, which prepares students for work in skilled occupations in industry, increased by 55%, from 1.1 to 1.7 million, between 1965 and 1969. Course offerings range from the more traditional fields of carpentry and plumbing to new occupations in law enforcement and atomic energy.
4. *Technical Education*. Technical education, which prepares students primarily for occupations in engineering and science-related specialties, is usually offered at the post-secondary level. Enrollments increased from 226,000 in 1965 to 315,311 in 1969. Recent developments in the area include the introduction of courses related to office work, health fields, and home economics.
5. *Agriculture Education*. The sharp decline in farm employment has been reflected in a marked shift in emphasis in secondary vocational agriculture courses. Once directed mainly at the improvement of farm education, vocational agriculture is increasingly concerned with off-farm occupations such as horticulture, farm management, agricultural technology, conservation, and farm services and supplies.

Between 1965 and 1969, enrollment in production agriculture dropped by almost one-fourth while enrollment in off-farm agricultural almost tripled, thus accounting for nearly 25% of all agriculture enrollments.

Total enrollments in vocational agriculture courses reached a peak of 935,000 in 1967 and dropped to 850,705 in 1969. During the same period, adult enrollments declined from 413,000 to 290,336 and post-secondary enrollment increased from 8,000 to 15,816.

6. *Allied Health Occupations Education.* Federally reimburseable vocational education is the largest producer of manpower in the health field below the baccalaureate level; it enrolled 175,101 in 1969, nearly three times the 1965 enrollment. The largest enrollment have been in practical nurse, nurse's aide, associate degree nurse, and dental assistant programs. New curriculums in this field include programs for jobs such as medical laboratory technician, dental hygienist, X-ray technologist, and surgical technician.

In addition to federally supported vocational education, there is a significant amount of vocational education being conducted by private schools. Available evidence suggests that this private vocational education covers a wide range of fields. One study conducted in Massachusetts shows that the private schools include trade schools, business colleges, beautician schools, allied health occupations schools, technical institutes, correspondence schools, barber colleges, and others (Schaefer and Kaufman, 1971).

The Massachusetts study further indicates that most private vocational schools are small, with enrollments of under one hundred students, and concludes that small classes and individualized instruction make many private schools an ideal environment for educating both students who failed in secondary schools and persons with a variety of handicaps.

The existing evidence seems to suggest that public secondary schools have been deficient in educating their students, and in many cases the private vocational schools have attempted to correct the deficiency. According to one study, private vocational schools have been in the forefront in educating the economically disadvantaged, though their efforts are not as effective as they might be, since they operate almost exclusively at the post-secondary level (Belitsky, 1969, p. 80). The obvious intent of the 1968 Amendments to the Vocational Education Act is improvement in the education of the economically disadvantaged. However, until the full intent of the Amendments is realized (and even afterward), private vocational education will continue to play a major role in educating those youths with "special needs." Unfortunately data on the size and scope of private on-the-job and private institutional vocational education are so inadequate as to make projections of need for educational personnel almost impossible.

A second force which has entered the vocational education picture has been the federal government's activities under the Manpower Development and Training Act (MDTA). These programs include both institutional and on-the-job training; among them are the JOBS Program, Neighborhood Youth Corps, Operation Mainstream, the Concentrated Employment Program, and skills centers. Because such programs are changing so rapidly, projections of need for education personnel seem impractical.

Implications of Manpower Trends

The basic purpose of vocational education is to prepare individuals to enter the world of work, which, along with the population of individuals entering it, is constantly changing. Vocational education must be responsive to these changes. Industrial and technological progress results in changes in the occupational requirements of the economy, which necessitate a restructuring of programs, goals, and priorities in vocational education. As occupational trends have direct implications for the future of vocational education, in a similar manner changes in the population to be served may require changes in education procedures.

The projected trends in labor force and occupational composition have been detailed and summarized in numerous publications. Therefore, only those trends which have direct implications for vocational education will be analyzed here (U.S. Dept. of Labor, 1969). Specifically, changing occupational needs will require the expansion of programs for allied health workers since a large number of people will be needed to meet the manpower requirements of the health field in the future. "Office" education will have to be focused more and more in the area of operating data processing equipment. Growth is also expected in the sales occupations, as well as in public services (e. g., police and firemen), human services (e. g., social work, recreation, and probation), and environmental occupations (e. g., sanitation, water and sewage treatment).

Perhaps more important than what will be taught in the future is who will be taught, that is, the composition of the labor force. There will be two important labor force trends for vocational education: (1) by 1975 one-quarter of the population aged sixteen to twenty-five will be in the labor force, representing a 30% increase over a ten-year period; and (2) by 1975 about 40% of the increase in the labor force will be comprised of nonwhite workers. These two trends would appear to indicate that vocational education must concentrate its efforts on the youth of the country and expand its efforts in training the economically disadvantaged.

Two other closely related trends bear on the future course of vocational education. The educational requirements for specific occupations have been rising and can be expected to rise even further. Similarly, worker aspirations have been rising to such an extent that certain jobs are becoming undesirable in the eyes of many workers. The educational system not only responds to changing employment requirements in the economy, but employment requirements in terms of education required responds to the changing educational system. Table 8-3 indicates that since 1952 the educational attainment within occupational groups has increased. While it is true that much of this is due to the increasing skills required of particular occupations, it is also true that as more persons with better skills enter the labor market, the fact that they are available in larger numbers in turn raises job entrance requirements still further.

As this trend continues — and it will continue, whether we like it or not — persons with less schooling will encounter more and more difficulty in finding employment. In future years, educational institutions will not only have to offer the

Table 8-3

Educational Attainment of Employed Males 18 Years Old and Older, 1952 and 1964

Occupational Group	Percent Completing 8 Years Elementary School or Less		Percent Completing 4 Years of High School or More	
	1952	1964	1952	1964
All Occupations	41	26	40	55
White-collar workers				
Professional and managers	17	10	71	81
Clerical and sales	17	11	66	75
Blue-collar workers				
Craftsmen and foremen	41	29	34	46
Operatives	50	34	24	38
Laborers	67	47	17	27
Service workers	53	38	27	40
Farm occupations	67	58	21	27

Source: L. A. Lecht, *Manpower Requirements for National Objectives in the 1970's*, Center for Priority Analysis, National Planning Association, Washington, D. C., February 1965, p. 182.

training necessary to meet rising entry requirements, but will also have to make a concerted effort to prevent persons from dropping out of school with no job entry skills, since these people will obtain jobs only with increasing difficulty.

As the educational level of the population rises, the occupational aspirations of that population will also rise, presumably at a greater rate. The lower the status of a job (and this is not necessarily correlated with pecuniary returns), the fewer will be the number of people willing to enter that occupation. In the future, many services which society needs may go unperformed because no one will accept those positions. Such jobs as window washer, janitor, and watchman, which are almost all classified as unskilled, will go begging if everyone has a skill. But in many instances low skill, low status jobs can be performed by mentally retarded persons, and vocational education will be asked to provide them with the necessary skills.

The Future Staffing of Vocational Education Programs

Future personnel needs in vocational education are determined, on the one hand, by the demand for teachers and ancillary personnel and, on the other hand, by the supply. A comparison of the two — demand and supply — provides an indication of the extent of personnel shortages in the future.

The demand for vocational education personnel is a derived demand; that is, it reflects the demand for vocational education itself. The greater the number of individuals who desire vocational education, the greater the number of teachers who will be needed to teach them, and the greater the need for ancillary personnel. The number of persons seeking vocational education is a function of the size, composition, and attitude of the labor force, and of the types of occupations which exist, coupled with the entry requirements of employers and the perceived desirability of vocational education programs. Therefore, the trends in the labor force, technological change, and attitudes must be examined to determine their future impact on the demand for vocational education and for personnel to provide it.

Another important factor affecting the demand for vocational personnel is the changing character of the educational process itself. For example, the growing use of ancillary staffs will change the role of the vocational teacher. A trend such as this can be expected to alter the "skill mix" among vocational education personnel.

Factors Affecting the Demand for Vocational Personnel

As stated above, the two factors affecting the demand for vocational personnel are the demand for and the approach to vocational education. The first factor is primarily a function of the changing skill needs of the economy. The major changes in the approach to vocational education are summarized briefly and are reflected in the projections set forth below.

A number of technological innovations will be widely adopted in the future by vocational educators. Closed circuit television, videotapes to show an individual how effectively he has performed, and teaching machines are some of the purely technological changes expected. However, these changes are not likely to reduce the need for teachers, but instead may permit teachers more time for individualized instruction.

The most important change to affect the future demand for and composition of vocational education personnel will probably be in the structure of education itself. The cluster curriculum is an approach which appears to be well-suited to deal with the deficiencies of today's vocational education system. If the system moves in this direction, the changes in the needs for personnel required by adoption of the cluster curriculum will define the future trends in the general demand for vocational education personnel.

There will doubtless be an acute need for paraprofessionals. Of particular benefit would be recruitment of persons who have come from the low income population. Such persons would serve as "role models" for the economically disadvantaged enrollee (lack of such models has been a major factor in the dropout problem). One possibility is hiring servicemen as paraprofessionals; they could provide a bridge for the low-income youth between his school work and the outside world.

Table 8-4

Employment 1966 and Projected 1975 and New Entrant Requirements 1967-75, by Major Occupation Group

	1966 Employment		Projected 1975		Percent Change 1966-75	New Entrant Requirement (1967-74) in Millions
	Millions	Percent	Millions	Percent		
White-collar workers	33.3	45.0	42.6	48.1	28	17.4
Professional and Technical	9.3	12.6	12.9	14.6	39	5.9
Managers, officials, and proprietors	7.4	10.0	9.0	10.2	22	2.8
Clerical workers	11.8	16.0	14.8	16.7	25	6.4
Sales workers	4.8	6.4	5.9	6.7	24	2.4
Blue-collar workers	27.2	36.7	29.9	33.7	10	8.3
Craftsmen and foremen	9.6	13.0	11.4	12.8	18	3.5
Operatives	13.9	18.7	14.8	16.7	7	4.1
Nonfarm laborers	3.7	5.0	3.8	4.3	(1)	0.7
Service workers	9.7	13.1	12.7	14.4	31	6.3
Farm and farm workers	3.9	5.2	3.4	3.8	–14	–0.4
Total	74.1	100.0	88.7	100.0	20	31.5

Source: *Tomorrow's Manpower Needs*, U. S. Department of Labor, Bureau of Labor Statistics, February 1969. *Estimates of Vocational Education Requirements Based upon General Learning Corporation Model*, prepared by J. Nussbaum, *et. al.*, for The Ohio State University Conference on Manpower Forecasting for State Vocational Education Planning.

The Demand for Vocational Education Personnel

As mentioned previously, any projection of future personnel requirements in vocational education must take account of the changing occupational requirements as set forth in Table 8-4, along with cumulative "new entrant requirements" associated with each occupational category.

Tables 8-4 and 8-5 project the personnel requirements for vocational education based on the future occupational requirements of the economy. These tables are founded on the assumption that in 1975 the civilian labor force will total 91.4 million people, of which 3% will be unemployed.

Table 8-5

"New Hires" Grouped by Major Field of Vocational Education: 1967, 1975, 1967-75

Major fields	New Hires		
	1967	1975	Cumulative 1967-1975
Trade and industrial	765,200	944,900	7,662,700
Office	648,800	846,700	6,686,900
Distributive	520,700	655,400	5,268,600
Health	155,600	233,100	1,730,000
Home Economics	144,800	166,700	1,398,900
Technical	52,200	74,700	565,400
Agriculture	–6,700	–1,100	–34,700
Other vocational education	417,900*	528,800*	4,239,200
Total	2,698,500	3,449,200	27,333,600

*Calculated on basis that "other" category has noncollege as 51.3 percent in terms of cumulative requirements. With the exception of the cumulative requirements, the data included "other" vocational with college.

Source: *Estimates of Vocational Education Requirements Based Upon General Learning Corporation Model,* proposed by J. Nussbaum, *et. al.*, for The Ohio State University Conference on Manpower Forecasting for Vocational Education Planning.

It must, of course, be recognized that there are a variety of ways in which individuals are prepared for the job market. Table 8-6 reveals that the majority of vocational education in this country (approximately 70%) is carried on in the public schools.[2]

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[2] Table 8-6 does not include all the possible training programs in the country (e. g., Operation Mainstream) but only those for which adequate data were available. However, the bulk of the programs in terms of enrollment is represented.

Table 8-6

Distribution of Vocational Enrollment, 1966

Program	Enrollment	Percent of Total
Public Vocational Education	6,070,059[1]	69.4
Private Vocational Education	1,863,750[2]	21.3
Total	7,933,809	90.7
Manpower Development and Training Act	265,000[3]	3.0
Institutional	150,000	1.7
On-the-Job Training	115,000	1.3
Registered Apprentices	242,648[1]	2.8
Office of Economic Opportunity	300,410	3.5
Job Corps	41,883[3]	0.5
Title V Trainees*	64,000[1]	1.0
Neighborhood Youth Corps	161,000[1]	2.0
Total	8,741,867	

*Trainees in work experience programs under Title V, Economic Opportunity Act.

Source: [1]U. S. Office of Education, *Vocational and Technical Education, 1966*, table 1.

[2]Prepublication data from Office of Education.

[3]Subcommittee on Employment, Manpower and Poverty, *Employment and Training Legislation*, 1968.

Table 8-7

Projections for 1975

Program	New Hires	Enrollments
Public vocational education	2,556,000	14,142,000
Private vocational education	783,000	4,332,000
Institutional trainees under the Manpower Development and Training Act	62,000	117,000
Job Corps	17,000	61,000
Trainees in work experience program under Title V, Economic Opportunity Act	31,000	83,000
Total	3,449,000	18,735,000

Source: Derived from Tables 8-5 and 8-6. See end of chapter for explanation.

For the basic formal education programs which prepare persons for the job market, occupational "new hire" requirements of the economy have been distributed and converted into enrollment figures in Table 8-7. (The method and assumption for these projections are described at the end of the chapter.) These results are reasonably consistent with other data derived by the U.S. Office of Education (USOE), which projects a total enrollment of 14.1 million in federally supported vocational education for 1975. The discrepancy between earlier USOE projections and those in Table 8-7 results from a difference in projecting enrollments for private schools. The projection contained here assumes the relative proportion of private to public school enrollments in vocational programs will remain the same, while the earlier USOE projection assumed a decline in the relative importance of private vocational education.

Table 8-7 shows that if the relative distribution of enrollments in vocational programs (both public and private) remains the same and if total enrollment approximates nineteen million, training could be provided for everyone entering jobs in 1975. This, of course, ignores the enrollment of individuals who may hold jobs, but who are also enrolled in courses in order to "keep up" with changing job content.

There is a basic difficulty with both the projections in Table 8-7 and those of previous USOE data which are derived on the basis of national data. Ideally, projections of this type should be built on a state-by-state basis. Occupational requirements differ not only by states and regions but also by sizes and types of vocational education programs available. Table 8-8 points up the disparity in the relative sizes of the vocational programs available in the United States, whereas Table 8-9 reveals that a "typical" state, such as Minnesota, is atypical in its vocational education programs.

In the future it will be possible to build projections on a state basis, since, as of 1969, each state is required to submit a long-range plan to the U.S. Office of Education. A major drawback to these state reports is the difference in the quality and sophistication of the projections. In future years, as the states improve their projections, national projections might be made by simply summing up the data of the fifty states.

If vocational education is to serve adequately the population of this country, the programs in the various states will have to expand at different rates since the states vary greatly in terms of the level and amount of vocational education currently being offered. For example, if all states were to enlarge their programs at the same rate as is proposed in Minnesota, in 1975 there would be only nine million enrollees in public vocational education, including adult education, secondary education, and post-secondary education. (The growth rates are calculated from Minnesota's state plan.) Using the same ratio for private programs this would produce a total vocational enrollment of twelve million in 1975, far short of being able to fill the nation's needs.

Table 8-8

Vocational Education Enrollment Per 1,000 Population for Selected States: 1966

State	Enrollment Per 1,000
Maine	10.2
Minnesota	36.0
Rhode Island	9.0
Utah	50.6
Washington	55.1
United States	31.3

Source: *Vocational Education*, General Report of the Advisory Council on Vocational Education (Washington, D. C., 1968), p. 12.

Table 8-9

Percentage Distribution of Enrollment in Vocational Education by Levels of Education: United States and Minnesota

Level	United States Percent	Minnesota Percent
Secondary	50.2	37.2
Post-Secondary	7.3	13.9
Adult	41.7	48.9
Special Needs	0.8	—
Total	100.0	100.0

Source: *Digest of Educational Statistics, 1968,* U. S. Office of Education (Washington, D. C.: 1968), and Minnesota's State Plan, 1969.

Data on the demand for and supply of teachers exist only for the first two categories in Table 8-7, namely, public and private vocational education. Therefore, the projections for teacher needs will be restricted to these two categories. These will account for over 90% of teacher requirements for training programs listed in this table. Table 8-10 presents projections on student enrollment and teacher requirements for 1975. Special needs programs, also included in the data, will be considered separately.

Table 8-10

Enrollments and Teachers Projected to 1975 by Level and Type of Program: Public and Private Vocational Education

Level and type of program	Enrollments	Teachers[1]
All Programs	19,170,000	448,300
Secondary	9,300,000	173,300
Post-Secondary	2,620,000	113,900
Adult	7,250,000	161,100
Trades and Industry	4,474,000	148,300
Secondary	1,206,000	37,900
Post-Secondary	644,000	30,900
Adult	2,624,000	79,500
Office	4,973,000	104,700
Secondary	3,050,000	58,600
Post-Secondary	974,000	28,600
Adult	949,000	17,500
Distributive	1,469,000	27,900
Secondary	372,000	7,000
Post-Secondary	89,000	2,600
Adult	1,008,000	18,300
Health	297,000	19,200
Secondary	37,000	1,600
Post-Secondary	246,000	17,000
Adult	14,000	600
Home Economics	5,817,000	81,900
Secondary	4,005,000	56,900
Post-Secondary	13,000	300
Adult	1,799,000	24,700
Technical	1,245,000	54,400
Secondary	130,000	4,500
Post-Secondary	649,000	34,400
Adult	466,000	15,500
Agriculture	896,000	11,900
Secondary	500,000	6,800
Post-Secondary	6,000	100
Adult	390,000	5,000

[1] These projections are based on previously published data. See the section on methodology for the derivation of Table 8-10.

The data utilized for these projections are the gross projections of USOE, which are consistent with the requirement changes in the economy, as indicated previously. An estimate for adult education was not included in the projections in Table 8-7 since the data are based on "new hire," and thus do not reflect enrollments of persons with jobs.

The key assumption underlying the projections in Table 8-10 is that vocational education programs throughout the country will respond to the changing occupational needs of the economy. The relative increases in program enrollments are based upon the relative increases in "new hire" requirements. (See notes at the end of the chapter for the method utilized.)

It is not possible to compare the 1975 projections in terms of the detail provided in Table 8-10 with present experience because of the absence of refined data on private vocational education. However, Table 8-11 reveals the comparative increases in the need for vocational teachers by level and program. In terms of program level, post-secondary education is expected to show the greatest relative increase, followed by adult education.

In 1966, post-secondary vocational education served 3.26% of the population 20-24 years of age. By 1975 this figure is expected to have increased to 13.6%. This rapid expansion in post-secondary education and the concomitant in-

Table 8-11

Relative Change in Vocational Teacher Needs
1966-1975 by Level and Type of Program
(Divided by the Mean Relative Change)

Vocational Education Classification	Standardized Relative Change
All Programs	—
Secondary	0.8
Post-Secondary	2.1
Adult	0.9
Trades and Industry	1.3
Office	1.7
Distributive	1.3
Health	2.0
Home Economics	1.0
Technical	2.6
Agriculture	0.005

Source: 1966 data from *Digest of Educational Statistics*, 1968, U. S. Office of Education (Washington, D. C., 1968), p. 35. 1975 data from table 10, *The Education Professions*, 1969-70, U. S. Office of Education (Washington, D. C., 1970), p. 20.

crease in the need for teachers are consistent with past trends. From 1965 to 1966 public post-secondary vocational education increased by 156.7%.[3] Factors affecting this past and future growth are the expected increase in participation of post-secondary vocational institutions in programs for the handicapped and economically disadvantaged and the sharp increase in the number of two-year colleges. Most important, however, is the changing occupational composition of the economy. The greatest increases in expected enrollments are in the fields of health, technical, and office occupations. This is evident in the relative teacher requirements presented in Table 8-11. In 1966 public post-secondary education had 43.6% of all health occupation enrollees, 39.5% of those enrolled in the technical category, and 13.4% of all office enrollees.[4] Together, these three groups represented over 68% of all enrollments in vocational education at the post-secondary level.

The rapidly changing technical and health fields will also have a considerable impact on adult education. In 1966, 44.3% of health enrollees and 49.1% of technical enrollees were in adult education (*Vocational and Technical Education*, 1968). To maintain their qualifications in these rapidly changing and expanding fields, more people will be seeking additional vocational training. Also, a greater number of lesser-skilled adults will find the need for upgrading as job qualifications are raised. These developments, plus the increasing emphasis on training the economically disadvantaged, will tend to increase the demand for adult vocational education. At present only 3.2% of the civilian labor force take advantage of adult vocational education services. This is expected to increase to about 8% by 1975.

The smallest relative increase in teacher needs will be at the secondary level unless a major change, such as adoption of the cluster approach, is made in the present vocational education program. With the exception of the office category, the great bulk of secondary school vocational education is in those categories which will experience the least growth in future years.

It is extremely difficult to make any projection of teacher requirements for the special needs category due not only to lack of adequate data but also to the impact of 1968 Amendments to the Vocational Education Act. A sample of the state plans reveals that the enrollments in special needs programs in 1975 will vary from 2% of total enrollment in some states to 10% in others if their actions are consistent with their projections. The average appears to be around 6.5%. If enrollment in special needs programs continues at the same growth rate as in previous years, total enrollment would approach two million. If the growth in enrollment were to continue with the same absolute changes, total enrollment would be only 280,000. Neither of these estimates is realistic (although the 280,000 figure is almost precisely equal to a projected enrollment if the entire country were to have only 2% of total enrollment as planned by some states).

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[3] These percentage figures are from *Vocational Education*, General Report of the Advisory Council on Vocational Education (Washington, D.C., 1968), table 15 and p. 28.

[4] *Ibid.*, table 12.

This last estimate is obviously low in view of the recent amendments. But a constant 50% growth rate is difficult to perceive in view of the personnel that would be required. The average of 6.5% appears to be a more realistic estimate, one which will result from a positive but declining growth rate of enrollment. On this basis the projection for enrollments of students in special needs programs is 800,000; the same growth in the need for teachers would create a demand of 21,800 by 1975. This estimate is reasonable and consistent with both the intent of Congress and the intent of state planners of vocational education. On the basis of this projection it is obvious that the demand for special needs teachers will be increasing most rapidly in the future.

Table 8-12 presents the projections for the ancillary personnel affiliated with vocational education. The basic assumption behind the table is that the ratio

Table 8-12
Actual and Projected Numbers of Ancillary Personnel 1966 and 1975

Personnel	1966	1975
State Level		
Directors or supervisors	378	860
Assistant directors or supervisors	420	1,080
Area supervisors	257	1,230
Youth specialists	32	240
Teacher trainers	160	150
Itinerant teachers	182	400
Research specialists	59	150
Guidance specialists	46	150
Curriculum specialists	79	150
Other	125	320
Teacher trainers (institutions)	2,145	5,666
Local Level		
Directors or supervisors	3,080	9,420
Guidance specialists	1,009	1,980
Curriculum specialists	123	320
Other	317	740
Total	8,412	22,856

Source: For 1966, *Vocational and Technical Education, Annual Report, 1966,* U. S. Department of Health, Education, and Welfare (Washington, D. C., 1968), p. 54. See notes at the end of the chapter for derivation on 1975 figures.

of total ancillary personnel to teachers will remain relatively constant. However, the relative changes for specific categories differ, with the greatest relative increases occurring in the various "specialist" and in the "teacher trainers (institutions)" categories. Table 8-12 reflects the expected increased need for support personnel to aid in establishing curriculums and the necessity to upgrade teachers in vocational education. By 1975 there will be a need for 5,666 teacher educators compared with 2,145 in 1966.

The projections up to this point have been based upon the expansion of the existing system of vocational education in response to the changing occupational needs of the economy. It is, of course, desirable that our educational system adjust to the changing economic environment. However, as suggested earlier, this adjustment should not take place along traditional lines. In view of the changing status of the worker and the increasing difficulty of the student in relating his education to his environment, many now regard the cluster approach as necessary in our secondary schools. Adoption of this approach will influence teacher requirements.

It is obvious from Table 8-13 that if a cluster approach to education is adopted, there will be an increased need for teachers prepared in vocational education. (The teachers required exceed the projected needs for traditional public and private vocational education combined.) The major impact will be at the

Table 8-13

Projected Vocational Enrollments and Teacher Needs in Public Secondary Schools in 1975 Assuming Cluster Curriculums

Program	Enrollments			Teachers
	Occupational Curriculum	Cluster Curriculums	Total	
Trades and Industry	184,000	1,114,000	1,298,000	39,300
Office	477,000	2,623,000	3,100,000	57,400
Distributive	59,000	322,000	381,000	6,900
Health	6,000	32,000	38,000	1,700
Home Economics	660,000	3,588,000	4,248,000	58,200
Technical	30,000	109,000	139,000	4,600
Agriculture	94,000	517,000	611,000	7,900
Total	1,510,000	8,305,000	9,815,000	176,000

Source: Total projection of 1,510,000 from *Projections of Educational Statistics to 1976-77*, U. S. Office of Education, 1967, p. 9. Other figures derived.

secondary level. At present, 26.9% of high school students go on to post-secondary training. Approximately 12 to 16% of vocational enrollees continue their education beyond high school, a percentage which can be expected to increase in the future because of the constant rise in job requirements.

If the cluster approach is adopted in secondary schools the number of students entering post-secondary education should increase because many students will need more specialized training to obtain certain jobs. For example, if it is assumed that 20% of students in the occupational and the general vocational categories combined continue their education, the enrollment in post-secondary vocational education would increase present enrollment and teacher needs by about 50%. Since it will be very difficult to prepare the additional number of teachers in the time alloted, adjustments will have to be made as soon as possible throughout the entire educational system if the new approach is to be adopted.

In 1975, the projected enrollment in public secondary schools is expected to be 15.1 million students (U.S. Dept. HEW, 1968). In the absence of any intensive studies on the cluster approach to education, we will assume that 35% of high school students will be enrolled in the strictly academic instructional category and 10% in the purely occupational category. This means that 55% will be eligible for the general vocational curriculum. Table 8-13 presents the projections for vocational education curriculums in public secondary schools under these assumptions. Again it is assumed that the particular curriculums are responsive to the needs of the economy.

The Supply of Vocational Education Personnel

The only supply data amendable to projection for vocational education personnel are those for accredited teachers in secondary schools. Information on staffing in vocational education is inadequate; for example, the percentage of vocational teachers graduating from schools of education is not known, nor is there information on the relative sources of ancillary personnel or administrators. Furthermore, in many allied health professions, and in other fields as well, paraprofessionals are accredited by professional organizations. As for the supply of teachers of adult education, it is impossible to estimate the numbers that are now secondary or post-secondary teachers, or the number that come from business and industry. Therefore, this section must be devoted primarily to examining the supply of secondary school teachers of vocational education.

Table 8-14 presents the supply of vocational education graduates by fields for the year 1968. If the present teacher education system were to remain static the total supply of accredited vocational education teachers would be about 20,000 for 1975. Assuming that education programs for vocational educators expand at the rate expected for all education programs (approximately 33% to 1975), the total supply will be 26,500 graduates. However, as indicated in Table 8-14, only 62.2% (on the average) enter the teaching profession. This means that even with

Table 8-14

Vocational Education Secondary School Teacher Supply (Number Prepared in 1968)

Program	Teacher Supply	Percent Entering Teaching	Number Entering Teaching
Agriculture	2,047	57.2	1,171
Business	9,001	63.5	5,716
Distributive	475	51.6	245
Home Economics	6,780	63.4	4,299
Health	1,017	67.6	687
Technical and T&I	609	44.2	269
Total	19,929	62.2	12,387
With 33% Growth	26,500		16,500

Source: Teacher Supply and Demand in Public Schools, 1968, Research Division, National Education Association, 1969, p. 25.

the expected increased teacher output, only 16,500 will be available to teach vocational education at the secondary level. It is probably that the 62.2% figure can be higher if the attractiveness of teaching positions, in monetary or non-monetary terms, is increased.

Supply Compared with Demand

Before the supply of secondary school teachers can be compared with the demand for teachers, account must be taken of replacement needs. The method used to calculate these needs has been to assume that the expansion in vocational education will be linear in absolute terms, which implies a positive but declining growth rate. This is not an unrealistic assumption since the growth of vocational education cannot continue to expand at presently expected rates; if it did, at some point in time more than 100% of the students would be in vocational education.

Table 8-15 presents the estimates of replacement needs and reentering teachers in vocational education for 1975 for all levels. The difference between these two estimates, plus the number needed to meet expansion, yields the total number of new teachers who will be needed by 1975. When adjustment has been made for the supply of vocational teachers in the distributive and trades and industry fields who are not obtained through the educational system, and similar adjustments are made in the adult category, the need for new teachers in 1975 is

Table 8-15

Annual Need for Vocational Education Teachers in 1975

Level	Replacement Need (1)	Teachers Reentering (2)	(1 - 2)	Expansion Needs	Total New Needs
Secondary	14,900	5,200	9,700	12,100	21,800
Post-Secondary	4,000	—	4,000	8,000	12,000
Adult	6,600	2,300	4,300	5,600	9,900

Source: Derived from *Teacher Supply and Demand in Public Schools, 1968*, Research Division, National Education Association, 1969, and *Tomorrow's Manpower Needs*, U. S. Department of Labor, Bureau of Labor Statistics, Vol. I, February 1969. See end of chapter for explanation.

for 22,800 in secondary schools, 14,600 at the post-secondary level, and an additional 1,400 for adult instruction.[5]

At the secondary level, a comparison of supply with demand does not provide an especially sanguine picture. If teacher education graduates continue to enter teaching at the present rate, the shortage of vocational instructors will exceed 6,000 by 1975. However, the potential supply (i. e., if all graduates were to enter teaching and if all teachers were to be prepared in fields where they were needed) would exceed the need by about 4,000. In other words, as pointed out previously, one possible method of overcoming the teacher shortage in 1975 would be to make teaching positions more attractive. The alternative is to expand the system for training vocational educators more rapidly.

Priorities for Recruitment and Training

The major thrust of federal support for vocational education should be at the secondary school level and, to a lesser extent, at the elementary and post-secondary level. The priority of aiding the economically disadvantaged and handicapped has been established by the 1968 Amendments to the Vocational Education Act, legislation which recognizes the need to educate teachers capable of communicating with and instructing these types of students. There is little question that the greatest shortage of teachers in the future will be in this area. The educational system must develop programs which will graduate teachers sensitive to the individual and able to counsel him — persons capable of gearing the education process to a wide range of student abilities.

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[5] See notes on methodology for the manner of adjustment.

Perhaps of more immediate importance than the preparing of new teachers are "inservice" programs for teachers already in the system. Not only must teachers be adequately prepared, but administrators, counselors, paraprofessionals, and other ancillary personnel should receive inservice instruction in the best methods of educating each student. Great stress should be placed on recruitment of paraprofessionals. If possible, they should be people from backgrounds similar to those of the students. The qualifications of the teacher aide may be as important as the qualifications of the teacher for working with the economically disadvantaged.

Research Needs

If educators and planners are to correct the deficiencies in the present vocational education system, they must not merely keep up with the changes which are occurring, but stay ahead of them. For this to happen, information presently lacking on the labor force, technological change, teacher supply and demand, etc., must be systematically collected as a basis for realistic planning. Research on supply and demand for personnel should be conducted and information provided at the state level, if not by smaller areas, primarily because regions differ in geography, industrial structure, population composition, etc. A national projection is of little value to state and local planners. As the state plans become more sophisticated in future years, with projections based upon the changing structures of occupations, one will be able to obtain a better estimate of the demand side of the teacher market.

One problem with current data is that enrollment figures include duplication; e. g., if a student is taking both a home economics course and a typing course, he is counted in both curriculums. In addition, other students who take such courses, but who are not enrolled in vocational programs, are counted as well. The published data on teachers also lack precision. Teachers reported by program and level represent an unduplicated count only for the total. Each reported level and program includes duplication; e.g., if a teacher teaches both home economics and health, and/or both secondary school and adult education, he is counted in each case. Because of these data inconsistencies, it is difficult to obtain an estimate of teacher needs, to say nothing of an estimate of student-teacher ratios which is needed for projections.

On the demand side, the research needs are somewhat less urgent than on the supply side; improvement in data collection is all that is necessary for the former. One major research need, however, is in the area of utilization of personnel, including ancillary personnel. Studies should be undertaken to determine new directions in educational structure and teaching methods in order to provide estimates of the future needs for all personnel, and especially for paraprofessionals.

The primary emphasis of research into educational manpower should focus on supply. Research should be initiated to determine the staffing patterns for both ancillary personnel and teachers for all levels of vocational education, including collection of information on preparation, certification, and upgrading. Studies should be undertaken, preferably on a regional basis, to determine the composition of the pool of qualified personnel who represent potential entrants to the teaching profession. If possible, the social and economic factors which influence the occupational decisions of present as well as potential teachers should be determined to permit policymakers to alter the relevant variables to attract and retain teachers.

Methodology

The projections for this discussion were derived largely through methods dictated by considerations of availability of data. The total enrollment figures in Table 8-10 were provided by the U.S. Bureau of Adult Vocational and Technical Education and are based upon the expected impact of the recent legislation. The methodology of the derivation of germane tables follows.

Table 8-7

The method for deriving Table 8-7 was to assume that the relative distribution of vocational education programs would not change between now and 1975. This relative distribution was employed to distribute the total new hires for the economy. The new hires data are from *Estimates of Vocational Education Requirements Based Upon General Learning Corporation Model*, prepared by J. Nussbaum and W. Morsch (in cooperation with J. C. Bernier and N. DeWitt) for The Ohio State University Conference on Manpower Forecasting for State Vocational Education Planning. The new hires requirements in the Nussbaum paper were derived by distributing the future occupational requirements projected by the Bureau of Labor Statistics in *Tomorrow's Manpower Needs* to vocational education fields.

In order to convert new hires to enrollments, present enrollment-completion (E—C) and completion-hire (C—H) ratios were applied. The ratios used were:

1. Private and public vocational education:
   E—C = 3.32; C—H = 60%
2. MDTA institutional programs:
   E—C = 1.38; C—H = 73.4%
3. Job Corps:
   E—C = 1.89; C—H = 53.4%
4. Title V Trainees:
   E—C = 1.29; C—H = 48.2%

Another assumption implicit in this approach is that in the future the relative distribution of hires from vocational programs will remain constant.

Table 8-10

The first step in deriving enrollments in Table 8-10 was to take the percentage change in new hires over the period by curriculum and apply them to 1967 vocational enrollments by level of education. In this way a hypothetical 1975 distribution was obtained for each level of education.

The relative contribution of each level of education was then used to distribute the total 19,170,000 enrollees, by level, for 1975. Within each level category, the relative distribution by program previously derived was then applied to the breakdown by level for 1975.

An adjustment in terms of relative contribution by program was made to distribute the "other" category of new hires, since no such category exists in the 1967 vocational education statistics.

The basic student-teacher ratios utilized were derived from *Vocational and Technical Education, Annual Report, 1966,* by the U.S. Office of Education. Since teacher data in this volume are presented by level and by program, but not by both, the assumption was made that student-teacher ratios are primarily a function of the type of education, rather than the level of education. On this assumption student-teacher ratios by type of program were applied to the derived enrollment figures.

To adjust for varying student-teacher ratios by level of education, the student-teacher ratios which were derived were then compared to those by level of education and adjusted to the 1967 student-teacher ratios for levels of education. For example, if the calculated student-teacher ratio for secondary schools was 10% higher than it actually was in 1967, all student-teacher ratios by program for secondary schools were lowered by 10%.

There is one major and unavoidable difficulty with this method. The number of teachers, by program, is an unduplicated count, whereas the teacher data by level comprise a duplicated count. Since the student-teacher ratios were adjusted to fit the latter data, the teacher projections in Table 8-12 include some degree of duplication.

Table 8-12

For Table 8-12, the total increase in ancillary personnel was projected, based on the assumption that the need for such persons would increase at the same rate as the need for teachers. This total was then distributed to particular categories in terms of the relative distribution of the 1975 projections which appears in Table 59 of *Vocational and Technical Education, 1966.*

Table 8-13

The cluster data were derived by applying adjustments of 10% and 55% to the projected 1975 secondary enrollment of 1,510,000. The 9,815,000 enrollees projected were then distributed by program in terms of the 1975 relative distribution of Table 8-10. The method for deriving the teacher needs was the same as for Table 8-10.

Table 8-15

Expansion of the vocational system was assumed to be linear in absolute terms. Therefore, the increased needs for new teachers due to expansion in the year 1975 are the average of the need over the entire period. It was assumed that 3% of new staff in secondary and adult education would come from reentry and that 8.6% of new staff would be needed for replacement. These figures were obtained from *Teacher Supply and Demand in Public Schools, 1968,* prepared by the Research Division of the National Education Association. The replacement figure for post-secondary teachers was obtained by applying the annual retirement rate for college teachers provided in *Tomorrow's Manpower Needs — Volume I.* No data on reentry for this level of education could be found. Since this factor is most likely small for college instructors, it was assumed to be zero.

The figures for adult education exclude that percentage of teachers obtained from business and industry, implicitly assuming that adult education will maintain its present staffing pattern through 1975.

It was calculated that 70% of distributive teachers and 90% of teachers in technical and trades and industry curriculums did not come from teacher education institutions. This calculation was made by comparing the number of teachers entering in 1968 with the number of persons hired to teach in 1968 by program at the secondary level. The latter series of figures was calculated by application of the ratio of "teacher education graduates as percent of new teachers employed" as provided in *Supply and Demand . . .* For the other vocational programs the number of teacher entrants exceeded the number hired, so that no estimate of staffing patterns could be obtained.

The supply data on health teachers unfortunately are published under the category of "health and physical education." It was assumed that 7% of this total represented health teachers. The 7% estimate is based upon the fact that this is the relative health enrollment in the total category of physical education and health in institutions of higher education (from *Students Enrolled for Advanced Degrees, Part A — Summary Data, Fall 1967,* National Center for Educational Statistics).

The final figures on need (21,800 for secondary, 12,000 for post-secondary, and 9,900 for adult) were estimated from the last column of Table 8-15, with the adult teacher need figure distributed on the basis of the 1967 distribution in terms of those who were full-time, secondary, and post-secondary.

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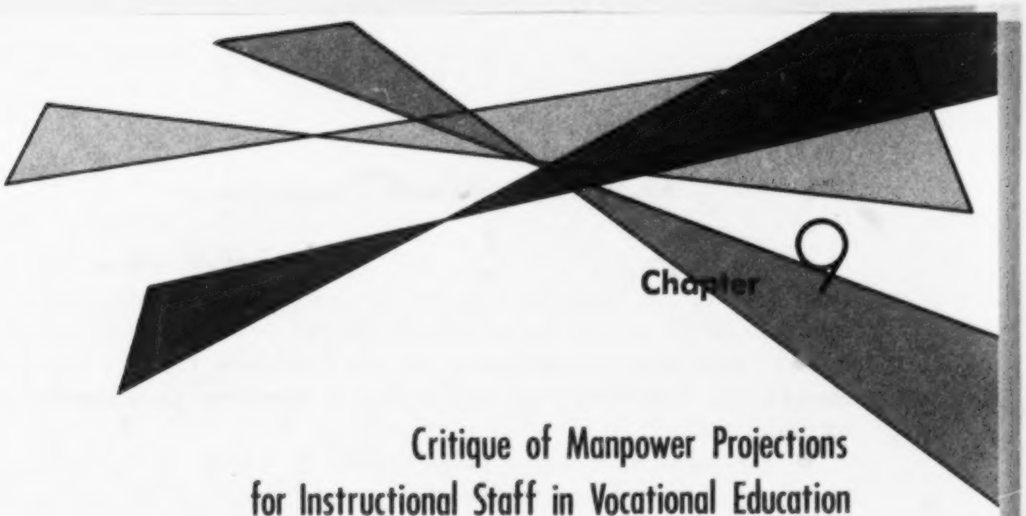

Chapter 9

Critique of Manpower Projections for Instructional Staff in Vocational Education

by Gerald G. Somers

Introduction

Projections of the requirements for teachers and their supply are eagerly sought by planners at all levels of the educational process. Demands for similar data are made on behalf of engineers, scientists, physicians, nurses, and other professional and technical personnel. The primary purpose of such projections is to guide institutions which train such high-level manpower and womanpower and to alert institutions which utilize such talent as to the possible staffing problems which lie ahead.

Unfortunately, the projection of manpower requirements and supply is a highly imperfect art. Past projections made by even the experts in the fields of education and other professional services have often diverged sharply from each other and have frequently missed their target predictions by a significant range. In spite of these imperfections and errors, educational planners continue to insist on projections, and efforts to provide them will undoubtedly continue to be made.

Projections of teacher requirements and supply in vocational and technical education are bedeviled by hazards that go beyond even those for educational forecasts as a whole. There are special problems in determining the requirements for vocational teachers at the national, state, and community levels, especially by program area; and there are even greater barriers in the way of accurate projections of the supply of teachers for vocational-educational institutions and programs. These problems and barriers go beyond those confronting the forecasters who make projections in the general field of elementary and secondary education where serious divergencies and errors have been notable.

These difficulties undoubtedly explain the paucity of efforts to make projections in the vocational field. Although partial and scattered efforts have been made to project some aspects of the demand-supply equation in recent years, the first full-fledged effort to project requirements, supply, and needs in 1975 emerged in early 1970. This report, prepared by the Institute for Research on Human Resources at the Pennsylvania State University (henceforth referred to as the Penn State Report), has been characterized by one of the foremost experts in the vocational field as "by far the best thing done yet on vocational education staffing." It seems appropriate, therefore, to use the Penn State Report as the basis for an appraisal of the methodology and findings of manpower projections for vocational education.

The Penn State Report forms Chapter 8. For clarity, however, its findings and methods are referred to at various points throughout this chapter. At the outset, it is best to state the conclusions of that report: *Manpower Needs in Vocational-Technical Education*, 1970, as shown in Table 9-1.

Table 9-1

Need for Vocational Education Teachers in 1975

Level	Replacement Need (1)	Teachers Reentering (2)	(1 - 2)	Expansion Needs	Total New Needs
Secondary	14,900	5,200	9,700	12,100	21,800
Post-Secondary	4,000	—	4,000	8,000	12,000
Adult	6,600	2,300	4,300	5,600	9,900

Source: Derived from *Teacher Supply and Demand in Public Schools, 1968*, Research Division, National Education Association, 1969 and *Tomorrow's Manpower Needs*, U. S. Department of Labor Statistics, Vol. I, February 1969.

> This table presents the estimates of replacement needs and reentering teachers in vocational education for 1975, for all levels. The difference between these two estimates, combined with the expected increased demand for the year 1975, yields the total number of new teachers who will be needed by 1975. When adjustment has been made for the supply of vocational teachers in the Distributive and Trades and Industry fields who are not obtained through the educational system, as well as similar adjustments in the adult category, the need for new teachers in 1975 is for 22,800 teachers in secondary schools, 14,600 at the post-secondary level, and an additional 1,400 for adult instruction.
>
> At the secondary level, a comparison of supply with demand does not provide an especially sanguine picture. If teacher education graduates continue to enter teaching at the present rate, the shortage of vocational

> instructors will exceed 6,000 by 1975. However, the potential supply (i.e., if all graduates were to enter teaching) would exceed the need by about 4,000. In other words, as pointed out previously, one possible method of overcoming the teacher shortage in 1975 would be to make teaching positions more attractive. The other alternative is to expand the system of the education of vocational educators more rapidly (pp. 44-45).

It is not clear that these conclusions, undifferentiated by program area or geographic region and based on a number of questionable adjustments and assumptions (discussed further below), will be of much benefit to those who wish to utilize manpower projections for educational planning. Indeed, the conclusions reached in this paper are that the projections in the "best thing done yet" may be meaningless and misleading.

It should also be noted at the outset, however, that the criticisms leveled at the Penn State Report are really criticisms of the "state of the art" rather than of the authors of the report. It is easier to critize projections than to make them, especially in vocational education where basic current data are seriously lacking.

The reliability to be placed in the national projections noted above can be assessed by looking at other projections. For example, the following projections of need, recently stated by Calvin Dellefield, a very knowledgeable person in vocational education, are as follows (Teachers: Vocational Education's Future, 1970):

> Enrollments in vocational education are expected to increase from about 8.5 million in 1969 to seventeen and a quarter million in 1975.
>
> With a student-teacher ratio of about 50 to one, we had a teaching force of over 170 thousand in 1969. Assuming that the same student-teacher ratio can be maintained, we will need at least 345 thousand teachers in 1975. That is more than 173 thousand above what we have now, an average of nearly 35 thousand additional vocational education teachers over the next five years. We are producing only about 20,000 additional teachers per year. That means that our production rate must be increased by nearly 75% per year. We must also produce additional paraprofessional support personnel in vocational education (p. 28).

Thus Mr. Dellefield indicates that we will have a shortage of 73,000 vocational education teachers in 1975 unless our production rate is greatly increased, whereas the Penn State Report indicates that the excess of demand over supply (under current procedures) by 1975 will be between 38,000 and 43,000. In addition to this wide discrepancy in total projections, further uncertainty is found in the Penn State conclusion that there may be either a shortage of 6,000 secondary-level teachers or a surplus of 4,000 by 1975, depending on the rate at which graduates enter into teaching.

The reasons for these discrepancies and uncertainties can best be appreciated through an examination of the methodology of projections.

Methodology of Projections

Requirements

Since the purpose of projections of teachers and other professional personnel is to guide the enrollment in these professional programs, it is customary to project the requirements or demand in, let us say, five years, alongside of the projection of the supply during the same period and, from this ratio, determine the predicted existence of a shortage or surplus. As is indicated in both of the conclusions quoted above, it is projected that there is likely to be a shortage of teachers in vocational education in 1975. However, these predictions are only as secure as the assumptions and adjustments on which they are based.

Projections for Teachers Generally and Vocational Teachers Specifically

Projections of the demand for new secondary teachers are customarily based upon projections of enrollment. If we assume that teacher-student ratios, teaching techniques, and current programs are all maintained (as is customarily done), the projection of the demand for secondary teachers as a whole is a relatively straight-forward process based on birthrates, the movement of age cohorts from elementary to secondary education, and predicted dropout rates. In these generalized projections of teacher demand, there is an assumption of homogeneity among students and teachers, precluding the need to make separate projections of requirements for particular types of teachers responding to the need of particular groups of students.

Projections of the demand for teachers in vocational education are much more complicated because the demand for teachers is not only derived from the demand of enrollees, as in the case of academic curricula, but the demand of enrollees is, itself, assumed to be a derived demand stemming from labor market expectations. Thus, the forecaster for vocational education must know much more than birthrates and movement of age cohorts through the educational process. He must first forecast manpower requirements in particular occupations, then translate these into training requirements for these occupations, then translate these educational requirements into enrollment figures by program types and school levels, and, finally, translate these specific enrollment projections into projections for instructional staff by program area and school level. Even this bypasses questions of projections for particular states and communities — a consideration which may be of considerable importance to state directors and to coordinators of particular schools.

In spite of the relative simplicity of demand projections for academic teachers, some earlier projections have seriously missed the mark; and even a more recent "correction" of previous errors has been criticized for wrong assumptions concerning the continuance of the current student-teacher ratios and program content (Folger, 1967, pp. 170-173).

Teacher Forecasts As They Relate to Manpower Forecasting

Since vocational teacher projections are based upon enrollment projections which, in turn, are based upon projections of manpower requirements, we must begin with the serious problems associated with manpower forecasting. Like most projections of manpower needs, forecasts in vocational education tend to rely upon the monumental projections turned out by the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor (Tomorrow's Manpower Needs, 1969). These are projections by industrial sectors and by occupations within industrial sectors. The projections of employment by industry sector are developed by means of an input-output matrix which relates the output of each industry sector to that of all other sectors. The sectoral projections are consistent with the projection for total employment in the economy in 1975, based upon predictions of gross national product (GNP) in that year and the consequent labor force required to bring about this GNP. The BLS matrix includes past and projected employment in each of 118 industrial sectors for 157 different occupations for the years 1960 and 1975. Beginning with data from the 1960 U.S. Census, the 1975 industry-occupation matrix is based on trends over the period 1950-1960, as modified through information obtained from additional sources.

Actually, the projections of "new entrant requirements" for particular occupations, used in the Penn State Report, are based upon data provided in a report by the General Learning Corporation (Nussbaum, *et al.*, 1969) which had based its projections in part upon the BLS industry-occupations projections. As the report of the General Learning Corporation indicates, there are "weaknesses inherent in all mortals based on the BLS data." Even though the BLS industry-occupation projection matrices are the best available, they are based on an extrapolation of trends in man-hour productivity, technology, government policy, etc., which prevailed in the U.S. economy in the early 1960's. They assume the input-output relationships of the American economy in a pre-Vietnam peacetime, and they assume relatively full employment in 1975. Although the picture would be clouded by a series of alternative assumptions in all of these categories, the limitations of the BLS assumptions must be borne in mind. They have been seriously questioned (Hansen, 1965). As only one example, we now know that labor force participation rates very significantly with overall rates of unemployment, especially among youth. If unemployment rates vary significantly among regions in 1975, we can expect the national projections to be further weakened as a source for regional or local policy.

If we turn away from national projections of manpower requirements, with the thought that vocational educational planners need local data, we find little improvement in the forecast. Area skill surveys, conducted by employment service offices throughout the country, have been roundly criticized on the scores of methods as well as accuracy (Somers, 1968). There are apparently serious drawbacks to any effort to project manpower needs based upon data received from employers. Surveys have indicated that employers make very few manpower forecasts within their own establishments and are not, therefore, in a position to relate such information to survey investigators (Perlman, 1969). A procedure relying wholly upon the national BLS projections avoids the problems of local manpower forecasts, and, at the same time, loses the value which local projections might provide for educational planning at the state and community levels.

In order to translate manpower needs into national vocational needs it is necessary to assign the BLS projections of manpower requirements in particular industry-occupations in 1975 to vocational education instructional program or curriculum categories. To perform this task the General Learning Corporation used an unpublished study by the U.S. Office of Education which defines curricula and categorizes them by their common, broad vocational education program areas (Nussbaum, 1969, p. 94). The result is a set of "new entrant requirements," that is, the number of people that are expected to be needed in a given occupation and associated instructional program as a result of both the growth of employment and natural attrition. However, the translation of employment projections by occupation into enrollment in vocational education curricula is a process fraught with uncertainties, based on questionable assumptions, leading to questionable results. The General Learning Corporation, itself, indicates the serious problems involved:

> Such a set of "associative" data is indicative or suggestive at best of potential training needs, but it is inconclusive by far. The multiplicity of ways in which functional occupational proficiency is acquired casts some doubt as to the validity of associating specific and nominal formal "vocational" education categories with actual occupational skill requirements. The existence of "some" relationship obviously cannot be denied, but what the operational link actually is should be explored further by additional studies (Nussbaum, 1969, p. 95).

We are all aware that most workers acquire their proficiency by learning on the job, and many others develop their skill through more formalized on-the-job training. Many other workers move to job openings from existing positions, thereby transferring skills already acquired. Unfortunately, the ratio of on-the-job skill acquisition to formal vocational education has not been established, either for the workforce as a whole or for those in particular curriculum program areas. Nor do we know the rates of labor mobility from other employers in particular program areas. Thus, the efforts to translate manpower projections for particular occupations into enrollment in vocational education program areas are to be commended on the basis of courage, but they are clearly based on herculean assumptions; and reasonable research analysts could arrive at very divergent assumptions.

Translation of Manpower Requirements into Vocational Enrollments

The attempts to translate projections of manpower requirements into vocational enrollments are beset by even greater difficulties. Even if we are willing to assume that given proportions of persons who wish to take a particular job will enroll in a formal vocational course in order to acquire the needed skill, we cannot assume that students will enroll in those courses for which projections indicate a manpower need. Nor can we assume that directors of vocational schools will necessarily establish those courses which are called for by the manpower projections. Indeed, recent research completed by the Center for Studies in Vocational and Technical Education of the University of Wisconsin show that few school guidance counsellors are aware of labor market realities and manpower projections by occupation. These studies also indicate that the initiation of new vocational programs are not necessarily geared to BLS projections of manpower needs. Local vocational schools are more likely to respond to the pressure of student demands and the needs of local industry in establishing new courses and programs; and these pressures may have little to do with the "expert" projections of manpower needs in particular occupations nationally, or even regionally (Perrone, 1968; Barocci, 1969).

Even if there were confidence in the assignment of occupational manpower requirements to vocational program areas, one could not be sure whether the vocational instruction would be taken in secondary schools, post-secondary schools, or in adult programs; nor whether they would be taken in public institutions or in private schools. The simplest approach is to assume that instructors of a particular vocational subject may teach students of any age, in public or private schools. Since the interchangability of instructors is not known, an alternate approach assigns enrollment to these various school levels by assuming that current ratios among these school levels will be maintained in 1975 in spite of the increased enrollment in some program areas relative to others. Here, too, reasonable men could come forth with widely differing assumptions, leading to widely differing projections of enrollment by school level. Moreover, an accurate projection of enrollment by school level in the nation as a whole would not necessarily help vocational education planners in particular states. It is well-known that the distribution of vocational students among secondary, post-secondary and adult programs differs widely by state.

Finally, projected enrollments, based on projected manpower requirements, must be translated into requirements for teachers in vocational education by program area. Although this process may not be as difficult as the projection of manpower requirements and program enrollments, grave problems are found here too. Are we to assume that teacher-student ratios, even if they could be accurately determined for particular schools and programs in particular areas, will remain the same in 1975; or will not this, too, depend upon the relative shortage or surplus of vocational teachers that results in the coming period of increased vocational enrollments? Similarly, will the technology and methods of vocational instruction continue in 1975 as they are today? Will there be no transfer of teachers from one vocational area to another as innovations are adopted, regardless of the dictates of manpower forecasts and the pressures of student enrollments?

At any rate, in spite of all of the attendant problems, the Penn State Report comes up with the projections of change in "teacher needs" by 1975, as shown in Table 9-2.

Table 9-2

Relative Change in Vocational Teacher Needs 1966-1975 by Level and Type of Program

Vocational Education Classification	Standardized Relative Change
All Programs	—
Secondary	0.8
Post-Secondary	2.1
Adult	0.9
Trades and Industry	1.3
Office	1.7
Distributive	1.3
Health	2.0
Home Economics	1.0
Technical	2.6
Agriculture	0.005

Source: 1966 data from *Digest of Educational Statistics*, 1968, U. S. Office of Education, (Washington: 1968), p. 35. 1975 data from Penn State Report.

As the Penn State Report indicates, if assumptions are made concerning adoption of the "cluster" approach to vocational education on a larger scale, differing projections of teacher needs by occupational areas will obviously emerge. Similarly the projections of teacher needs are based upon the present ratio of teachers to ancillary personnel. If these ratios were to change, and pressures for the adoption of larger numbers of aides and assistants in education grows constantly, then the teacher projections would similarly change.

It should also be stressed that there are very practical considerations which place constraints upon projections of the future demand for teachers in vocational education. In many schools at the present time, the overriding limit on increased enrollment is the capacity of existing facilities. In a number of vocational programs, this limitation on enrollment — and therefore on the number of new teachers needed — is likely to be the predominant factor for the next few years. The capacity of present facilities may continue to set a practical limit on enrollment and instructional demand in 1975 in spite of the laborious projections based on expanding manpower requirements and consequent enrollment. Of course, the longer the period of the projection, the less important is the limitation set by fixed physical facilities. However, the longer the period of the projection, the less faith can be put in its accuracy for other reasons.

Given all of these problems of inadequate data and the many assumptions that have to be made as to the behavior of students, workers and teachers because of the lack of accurate behavioral information, one might well say to the consumer of projections of teacher requirements in vocational education: "*Caveat emptor*"!

Supply

Although projections are likely to stress requirements (demand), it is equally important to project potential supply of vocational teachers. The determination of a possible shortage or surplus depends upon the balance of projected demand and supply.

Unfortunately, the calculation of the probable supply of teachers in 1975 is beset with at least as many difficulties as the projection of demand. As in the case of demand projections, the situation in vocational education is more complicated than that of the relatively homogeneous academic programs. And yet, even the projections of the supply of teachers in general education have gone far astray. Forecasts made by government agencies as late as 1965, usually stressing the imminence of growing shortages, proved to be wrong by 1970. Many school districts are now faced with a surplus rather than a shortage of elementary school teachers. Similar errors were made in the projections for university teachers, as many emerging PhD's are now finding to their great consternation. Although the errors in the projections of teacher shortages resulted from a misjudgment of both demand and supply factors, it is suggested that the principal miscalculations were on the supply side (Folger, 1967, pp. 144-145).

The essential error made by the forecasters of teacher supply in general education was to underestimate the flexibility and adaptability of the sources of potential supply of instructional personnel. Most notably, growing shortages and other factors generated improved working conditions, which prompted an unusually high rate of return to the profession by former teachers and gave rise to accelerated procedures by which university educated persons could be prepared for a transfer to high school teaching.

This factor of the flexibility of supply is also likely to be the major source of error in the projections made in vocational education. Forecasts say very little concerning supply, other than to adopt the projections made by the National Educational Association, as exemplified in Table 9-3.

In most national forecasts, the only supply data amenable to projection are for accredited teachers in secondary schools. Even for this group, the report must make an assumption concerning the change in the supply of graduates of education programs which prepare teachers for secondary vocational education programs. The adopted increase for the period 1968 to 1975 is 33%, perhaps because this is the rate of increase which the National Education Association has

Table 9-3

Vocational Education Secondary School Teacher Supply, 1968, 1975

Program	Teacher Supply	Percent Entering Teaching	Number Entering Teaching
Agriculture	2,047	57.2	1,171
Business	9,001	63.5	5,716
Distributive	475	51.6	245
Home Economics	6,780	63.4	4,299
Health	1,107	67.6	687
Technical and T&I	609	44.2	269
Total (1968)	19,929	62.2	12,387
With 33% growth (1975)	26,500		16,500

Source: Penn State Report, from *Teacher Supply and Demand in Public Schools, 1968,* Research Division, National Education Association, 1969, p. 25.

anticipated for all teacher education programs in the country. One might also assume that 62.2% of the graduates will actually enter the teaching profession because it has been determined that this percentage applied in 1968. One need not dwell on the dangers inherent in the adoption of these two assumptions concerning the supply of secondary vocational education teachers in 1975. Even if one were to accept the view that the supply of teachers as a whole were to increase by 33% in 1975 (rather than 40% or 20%), there is no reason to believe that this percentage would also be applicable to secondary vocational teachers. Surely, the supply of secondary teachers as a whole will respond, in part, to the demand; and with inevitable changes in the demand for teachers, there will be a change in the ratio of increased supply. The demand for vocational teachers is not likely to be the same as that for teachers in academic curriculum areas. The same correction must be applied to the ratio of graduates of education programs who would naturally enter the teaching profession. This ratio will clearly be influenced by the relative shortage or surplus of vocational teachers, as reflected in the salaries relative to those that might be obtained in alternative employment. It is consequently disturbing to contemplate the range of error which might be involved in the projecton of 16,500 teachers entering secondary vocational schools in 1975.

Even so, this projection covers only those graduating as accredited teachers for secondary vocational schools. As the Penn State Report notes, this limitation is required because of the inadequacy of information on the sources of staffing in vocational education.

The fact is that there is even greater flexibility in the sources of supply of vocational educators, at least in some vocational curricula, than in the supply of teachers in secondary schools as a whole. As in the case of teachers for general education, there is a very significant return to teaching by those formerly in the profession; and the return ratio depends to an important extent on the nature of the demand and the salaries available. Whereas the return to teaching in general education is often from a nonlabor force status, the return to vocational teaching is frequently by way of industrial jobs, military occupations, or teaching in nonvocational programs. The situation is especially complicated because state departments of education determine certification requirements for teachers, and, therefore, there are substantial variations from state to state. Formal educational programs and certification are generally available in agriculture, home economics, and business education. Little actual work experience is required in these program fields in most states. On the other hand, there are few formal educational programs, in the higher education field, for trade and industrial teachers and those in distributive education. Here work experience is almost always required (Evans, 1971). However, these requirements are by no means fixed; and they are often changed and waived when there is a shortage of qualified instructors, that is, when the demand for vocational-technical teachers is greatest. As Evans has noted, the first step in meeting the teacher shortage is to waive requirements for preservice teacher education, and the second step is to reduce the number of years of required employment experience (Evans, 1971, pp. 204-205).

A careful review of the studies on teacher sources conducted by Jerome Moss (1967, pp. 8-10) indicates the importance of sources other than the formal educational programs in colleges and universities designed to prepare students for vocational instruction. These studies show the importance of transfers from industrial employment for instructors in trade and industry programs; of a return to vocational teaching from a nonlabor force status for those in home economics; of retiring military personnel in a number of program areas; of presently employed teachers in general or academic programs. Part-time teachers in adult evening programs also constitute an important source of transfer to full-time day or evening vocational instruction.

Problems in projecting the potential supply of vocational teachers are especially notable in the case of those in trade and industry programs. In a survey covering thirty-five states in 1965-66, Beaty (1966) found that for both high school and post-high school trade and industrial positions, the sources yielding the greatest number of teachers were, in rank order: (a) men employed full time in industry, (b) teachers in nonvocational subjects, (c) graduates of college or university programs, (d) evening school instructors, (e) full-time industrial employees attending degree programs on a part-time basis, and (f) ex-military personnel. For teachers of technical education programs, he found that here, too, the most important source was men employed full time in industry.

A detailed study of teacher sources in Wisconsin, recently completed by the Center for Studies in Vocational and Technical Education, indicates the importance of sources other than regular teacher education programs for many post-secondary program areas in addition to trade and industry. As is noted in Table 9-4, business and industry as sources of recruitment are almost as important in technical and distributive programs as they are in trade and industrial education. The Wisconsin experience also demonstrates the importance of mobility of teachers from one educational sphere to the other, and, within the vocational system, the movement from high school to the post-secondary level and from one vocational program area to another. Needless to say, the pattern of sources will differ in the different states and the patterns will also differ over time. Such variations create a serious obstacle in the path of forecasting. In the patterns on the national level, there is little assurance of similarity in the patterns in regional or local areas.

Balance of Demand and Supply

As was indicated earlier in this discussion, forecasters, after examining and presenting a variety of statistics on the projected requirements for vocational teachers in 1975 and the expected supplies of such teachers, have concluded that, on balance, there is likely to be a shortage of vocational instructors by 1975. As indicated, these conclusions were reached on the basis of projected increases in the demand for teachers because of increased enrollment, added to the replacement needs, with a subtraction of the anticipated increases in supply by 1975. When talking about the "need" for vocational teachers in 1975, it is important to give full weight to any potential increases in the supply of teachers as well as the anticipated increases in the requirements for teachers. As in the case of the projections for academic teachers in general, it is the tendency to underestimate the flexibility in teacher supply that raises the most serious quesions concerning the reliability of the projections of shortages in 1975. As suggested above, supply has a way of adapting to demand. The number of sources of vocational teachers is so large and so varied that the flexible adaptation of supply to the demand for teachers in this field is likely to be given more scope than in many other fields.

The doubts concerning the national projections of a lack of balance arise not only from the methodological problems discussed above; but also from the fact that earlier projections have reached conclusions concerning "needs" in 1970 which are not substantiated. And, other projections are made for 1975 which vary significantly (Moss, 1967, p. 8) from those cited above.

Since the Penn State Report projected supply data only for secondary school teachers, the balance presented there (as indicated at the beginning of this discussion) is only at the secondary level. Even there, however, the supply data do not appear to be sufficiently adjusted for those who enter a number of teaching fields from sources other than the educational system. In contrast to the minor adjustments made by the Penn State Report, the national data presented by Beaty and the Wisconsin data presented by Gibbs (1969) indicate that a very major adjustment must be made because of this factor. Unfortunately, the extent of the adjustment will differ year by year depending upon the relative strength or weak-

Table 9-4

Post-Secondary Vocational-Technical Teacher Sources by Curriculum Area in Wisconsin (Status Immediately Prior to Employment in Post-Secondary Vocational Education School)

Curriculum Area	Bus. & Ind'y	Teacher Educ.	General Educ.	Hi Sch. Vocat'l	Hi Sch. Academ.	Vocat'l System	Mili-tary	College Teacher	Nur-sing	Nonlabor Force	Total
Trade & Industry	55.36	18.88	1.72	12.45	3.00	3.00	4.72	0.86	0.00	0.00	100.00
Business & Office	34.62	13.46	1.92	30.13	8.33	1.28	0.64	3.21	0.64	5.77	100.00
Home Economics	21.74	13.04	4.35	21.74	17.39	4.35	0.00	0.00	0.00	17.39	100.00
Agriculture	13.64	13.64	0.00	54.55	9.09	0.00	4.55	4.55	0.00	0.00	100.00
Distributive	43.75	25.00	12.50	9.38	3.13	0.00	3.13	3.13	0.00	0.00	100.00
Health	15.19	7.59	1.27	0.00	1.27	1.27	1.27	7.59	59.49	5.06	100.00
Technical	48.51	22.77	1.98	4.95	6.93	5.94	4.95	3.96	0.00	0.00	100.00
General Academic	18.50	13.00	6.50	2.50	45.50	0.00	1.00	10.00	0.00	3.00	100.00
Coord- Supervisor	20.20	15.15	3.03	18.18	20.20	3.54	6.57	5.56	4.55	3.03	100.00
Totals	32.85	15.71	3.26	13.60	15.90	2.30	3.35	4.79	5.46	2.78	100.00

Source: Jeffrey L. Gibbs, *The Education, Sources, and Recruitment of Wisconsin Vocational-Technical Teachers.* The Center For Studies in Vocational and Technical Education, University of Wisconsin, June 1970.

ness of the pull of demand. Changing forces of demand will also influence the adjustment that needs to be made for those reentering vocational teaching. There will be similar effects on the movement from part-time to full-time instruction and from other segments of the educational system into secondary vocational schools. Obviously, any significant change in salaries for secondary vocational teachers arising because of an upsurge of demand for teachers in this category will serve to attract a greater supply of teachers from the varied sources indicated above.

The mobility of vocational educators — among educational systems, among school levels, among program areas, and among alternative types of employment — makes it impossible to discuss a balance between supply and demand of teachers in a particular level, such as secondary vocational education, in isolation from all of the other levels and types of programs. The final balancing in the Penn State Report also bypasses the possibilities of mobility between the vocational educational system and the rapidly expanding training programs included under new manpower legislation, antipoverty measures, and community action agencies. The 1968 Report of the Secretary of Health, Education and Welfare on the Manpower Development and Training Act estimates that about 8,000 instructors are engaged in institutional or coupled training provided by the manpower program. In a field survey of the major sources of teaching staff for the manpower training programs, the Secretary's report concludes:

> Substantial numbers of the skill trainers are people who have learned their skills in industry, retired persons who have joined the manpower program, and those on leave from industry. Some are part of the vocational education system, many of them retired teachers. Fairly large numbers of manpower trainers are young people without prior teaching experience.

The report indicates, however, that there is also a relatively high rate of turnover among skill instructors in the manpower program, both voluntary and involuntary; and it is reasonable to conclude that this results in substantial mobility between manpower programs and regular programs in the vocational education institutions (U.S. Dept. of HEW, 1968, pp. 27-28). Thus, the effects of the manpower programs on the supply and demand balance for vocational instructors, depending as it does on the legislative action at federal, state, and local levels, introduces another note of serious uncertainty in the projections.

We can only conclude that the methodological pitfalls are such that a projection of a shortage of 6,000 secondary vocational teachers in 1975, or any similar predictions, can be accepted only with great hazard. It would be nearly as reasonable to conclude, on the basis of the methods adopted, that there would be no shortage at all, or that there might be a potential surplus of 6,000 or more.

Basic Data Needs

If the foregoing discussion is correct, the basic data required for national vocational teacher projections which can be utilized with any confidence are not available. In view of the many obstacles in the path of accurate projections, one is tempted to abandon the entire enterprise in despair. However, the widespread demand for projection of teacher supply and demand continues, and it is clear that projections *will be made* and *will be utilized in the future*. This section suggests the types of data that would be needed for a full-fledged national projection and presents a more modest approach based upon present data.

Manpower Requirements and Training Needs

Considerable progress has recently been made in the development of projections of manpower requirements on the national level. As noted above, the Bureau of Labor Statistics' publication, *Tomorrow's Manpower Needs*, is a monumental contribution to occupational forecasting by industry and occupation in the country as a whole. As was indicated above, useful efforts have also been made to translate the projection of manpower requirements into classifications customarily used in vocational education programs (Goldstein, 1969). In the period ahead we must test the accuracy and the results of these forecasts with appropriate experimentation to increase their accuracy and usefulness. The most important research and data needs at the national level are concerned with the net effects of mobility among occupations in influencing the occupational and training needs in the future. Substantially more study must be made of mobility patterns, and these must then be related to projections of manpower requirements by industry and occupation. Similarly, much more study must be made of procedures for retraining and upgrading within industry itself as a means of meeting the manpower shortages and unfilled openings in particular industries and occupations. The movement among employers, industries, geographic areas, and occupations within the same establishment, even though studied extensively in the past, is still not sufficiently known to provide data needed for occupational projections of manpower requirements.

The greatest needs for further extensions in manpower requirement forecasts, however, are in the application of national projections to state and local requirements. Here, too, there has been recent experimentation and some promising results (Medvin, 1969). Through the use of unfilled openings and shortage occupations listed in the employment service, and, more recently, through the extension of job vacancy surveys, when related to the national industry-occupation matrix projected by BLS, it may soon be possible to develop reasonably accurate forecasts of manpower requirements in particular localities without prohibitive costs. The immediate need in this area, too, is a testing and experimentation with recently established techniques.

Much more study of the relationship between manpower requirements and vocational training is needed before we can be at all confident about the translation of manpower forecasts into actual enrollment in particular vocational programs at the national, state, or local levels. In spite of a number of recent research projects, we still know very little about how workers acquire the skills needed to prepare them for a particular occupation. A study along this line conducted in the early 1960's produced somewhat inconclusive results because responses of individual workers were not validated by checks with their employers or with the school programs which they claimed to have attended. Efforts to approach this question by surveying employers and workers in particular establishments are just now being planned (Somers, 1969). Until we know how many workers needed for a particular occupation are going to be provided by the many routes other than regular vocational programs, simply knowing projections of manpower requirements will not provide us with projections of enrollments in vocational programs. Moreover, we must also know the numbers of enrollees in vocational programs who complete their course of instruction and actually enter into the occupations for which they were trained. Without this information, manpower requirements in 1975 cannot be readily translated into enrollments required for particular vocational programs at the present time.

Studies must also be made of the factors influencing enrollments in vocational programs which have no direct relationship to projected manpower requirements by occupation. What are the influences on the decision-making process of students selecting vocational education rather than college preparatory programs? What leads them to choose vocational drafting or distributive education? What is the relationship of vocational guidance to the realities of the labor market? To what extent does the limitation of physical facilities really determine the enrollment in particular schools and in particular programs? These still remain essentially unanswered questions, and yet the data are needed for accurate projections.

Teacher Demand and Supply

Before projected enrollment can be accurately translated into demand for vocational teachers, we must know more about the factors influencing teacher-student ratios in particular programs. Studies on the effects of new techniques of teaching on student-teacher ratios are needed. Along this line, the combination of occupations into clusters and the teaching of a general framework of skills must have an effect upon the demand for teachers in particular programs. This effect is only slightly known at the present time, and more study and analysis are required.

The greatest need for study in projecting teacher shortages or surpluses, however, is in the area of supply. Forecasters must have detailed information on the sources of the supply of vocational teachers, by program area and by school level, nationally and in states and localities. Studies must be made of the changes in the patterns of the sources of teacher supply under varying conditions of national employment, supply and demand for teachers. The whole area of the mobility of vocational teachers requires further analysis as a basis for projections. One cannot know replacement needs without greater knowledge of turnover records. Likewise, one cannot know the requirements for teachers at the secondary level without knowing how many moved from secondary levels to post-secondary levels and vice versa. Forecasters and planners cannot know how many vocational teachers are needed in the regular system without knowing the degree of movement back and forth between the regular system and the growing variety of manpower programs.

The list of research data needs for accurate projections of instructional personnel in vocational education is a formidable one. It is likely to be a long time before these research needs are met.

A More Modest Short-Run Approach

It appears that the effort to develop highly precise projections of the need for teachers on a national scale as well as in states and localities is premature, given the present state of data on manpower requirements, enrollments, and teacher behavior. At the same time, projections are needed and an effort should be made to provide some guidance to those who need and demand teacher projection data. In order not to mislead the users of projections, forecasters must scale their objectives and scope to the limits of their knowledge and abilities. Until more accurate data and more extensive information are available, the short-run approach to projections of teacher requirements in vocational education must be a limited one, geared to specific needs and objectives.

It is assumed there are two primary needs for projections of instructional staff in vocational education. First, university and college authorities who plan the educational programs for the training of the vocational instructors wish to know the probable size of their enrollments in the next few years and the likelihood of successful job placement of their graduates. Secondly, directors of vocational programs at the state and local levels wish to anticipate the problems they may have in staffing their instructional programs. The projections needed to meet these two objectives are closely related, but they are sufficiently different to permit alternative approaches.

Enrollment in Teacher Education Programs

One would expect that educational planners in universities and colleges would translate projections of manpower requirements for broad occupational groups into teacher needs for particular programs. Certainly, in the broadest outline, the relative magnitude of requirements in broad occupational areas is known. There is general agreement, for example, that demands in health and technical occupations will grow and that demands in traditional agricultural pursuits will decline. The projections made by the Bureau of Labor Statistics, by the General Learning Corporation, and by the Penn State Report can be of some usefulness in giving somewhat greater precision to the "conventional wisdom" about expanding and declining occupational areas.

Educational planners in universities and colleges apparently use available employment forecasts for choosing which of the new and emerging fields of employment will be translated into new teacher education programs. But the fact that they have not been using the available projections in decreasing the size of certain current programs may, paradoxically, indicate that they have no confidence in the projections. The lack of precision in past forecasting of needs indicates that these planners may have been wise, and that they will do better, given all the slips 'twixt manpower requirements on the one hand and teacher needs on the other, to project future enrollment in their institutions by looking at the trends in enrollment in the immediate past, the demands likely to arise because of "emerging occupations," the demands of vocational schools for the graduates of their teacher-training program, and the experience of their recent graduates in obtaining jobs. To the extent that potential enrollees in a teacher education program are cognizant of the types of projections discussed above, the choices of these students may affect enrollment trends in teacher education programs. However, the enrollment in teacher training institutions is likely to be influenced by many other things as well, and the planners in these institutions would probably reach a more accurate forecast of enrollment in their programs in the near future by looking at past enrollment trends and by surveying potential students about their plans for further education.

Given the frailty of the projections, the best immediate procedure for determining how many *should* be enrolled in particular programs of teacher training for vocational education might be the test of the market for the graduates of these programs. Administrators of vocational school programs should be surveyed in order to determine the likely demand for teachers, by particular programs, in the next few years. A more objective test would be the actual experience of the graduates of the teacher education institutions in the past few years. Are they receiving the same number of job offers, from the same quality of schools, at progressively higher salaries? Or has there been a deterioration in the number of offers per graduate, especially from the higher quality schools; and has the rate of increase in salaries begun to decline? Given the present state of the art, planners in teacher education institutions would do well to place their primary emphasis on such direct sources of information about probable enrollment and desirable enrollment in their programs, as a supplement to the imperfect projections on a national basis which are now at hand. Such direct information can be fairly readily obtained at the state or local level, and it is frequently at these levels that the information is most necessary and most useful. A national picture of projections of enrollments in teacher education institutions for vocational education can be developed from a summation of state projections, given some information on the mobility rates and patterns of graduates of the training institutions.

Since the demand for the graduates of teacher education institutions is dependent upon the projected need of particular vocational and technical schools, the projections of teacher requirements at the school level are of fundamental importance. This information is needed not only to guide the planners in college and university teacher preparation programs, but also, as indicated above, it is important in guiding the staffing plans of the administrators of vocational and technical school programs. Here, too, however, local school vocational administrators would do well to make their own projections of teacher requirements based upon projections of their own enrollment by program area. Needless to say, broader projections stemming from manpower forecasts at the national and state levels will be of some value in arriving at the local teacher projections. But knowledge of their own enrollment trends in the immediate past, the factors influencing their enrollments, the graduation rates of enrollees in particular programs, the job placement and salary experience of enrollees in their schools, the teacher-student ratios in particular programs in their schools, and the expected adoption of new teaching techniques are all likely to be more valuable pieces of information for the local school vcational administrator in projecting his need for teachers than the national projections now in existence. On the supply side, the school administrator should analyze the sources of his or her present teacher supply by program area, and, if possible, study the trend in the pattern of these sources over the past few years in periods of varying demand. Such data would permit the local school director to know the degree of flexibility of teacher supply in adapting to changes in demand. Among other things, it would permit him or her to know the permissible margin of error in projections of the demand for teachers in his school. The recruitment of vocational teachers from a variety of sources on short notice for traditionally oriented curricula can serve to reduce the need for accurate projections of teacher requirements; this will not, however, satisfy the problems in new and emerging types of curricula. As in the case of educational planning in teacher education institutions, state and national projections of teacher supply and demand in particular vocational programs can be developed from local projections. This would supplement the projections that begin at the national level, with the hope that they can be adapted for state and local needs. Until the approach "from the top down" can be perfected, the pressing need for projection data at local and state levels can best be met in the short run by a supplementary approach "from the bottom up."

Conclusions

Very few national projections of teacher supply and demand in vocational education have been attempted. Those that have been made arrive at varying estimates of the amount of shortage which all agree will exist. The most recent and ambitious attempt to project supply and demand is seen to be limited in the range of the projections and so beset with a lack of necessary data that a set of questionable assumptions must be adopted, resulting in questionable projections of both supply and demand. The criticism is not directed at the authors of these studies; they are to be commended for their courage. Rather the blame lies in the lack of needed data and the sorry state of the art of projections.

In view of the limitations of the national approach, in the face of pressing needs for projections by teacher education institutions and school coordinators, a more modest and direct short-run approach is suggested. Instead of travelling the lengthy and hazardous route of manpower forecasts (enrollment projections, teacher requirements, enrollment in teacher education institutions), it is recommended that the planners in such institutions base their projected enrollments on direct surveys of past and present enrollment and the changing employment experience and demand for their graduates.

Instead of following the same lengthy route, state and local administrators of vocational education would do well to derive projections of their teacher needs from direct surveys of the factors influencing enrollment in their programs; and these projected needs should be related to information on the past, present and potential sources of supply of teachers for their schools. When more data are available on the forces that influence supply of and demand for teachers, then national projections, starting from manpower forecasts, can replace the more modest and mundane approach which starts "from the bottom up."

Admittedly these suggestions constitute a major retreat from the grandiose projections of teacher supply and demand that we would all like to have. Efforts to produce such projections, based upon additional accumulations of data, should continue even though these national projections are not yet sufficiently reliable to be of much use in satisfying the present needs. In the short-run, a more modest approach to teacher projections is appropriate.

If reasonably accurate forecasts of local-state enrollment and teacher needs are forthcoming through the procedures suggested above, the failings of national projections need not be a matter of great concern. The absence of resounding national forecasts of monumental shortages should result in less "acceleration" in planning errors on the supply side. Fewer "innocent" teacher-candidates would be enticed into a field for which there may later be an oversupply.

The more accurate local forecasts should be more conservative on supply needs. And if it should prove to be the case of an underestimation of demand, especially with regard to teachers for new and emerging occupational programs, experience has demonstrated the rapidity and flexibility with which supply can adapt to unanticipated demand. Although the flexibility may result in a reduction of quality in the short-run, perhaps this deficiency can be corrected without serious long-run consequences.

Thus, the pessimism concerning the present state of the art of national teacher projections should not discourage reasonably accurate local projections. Also, the flexibility of teacher supply should serve as an encouraging means for overcoming errors in projections.

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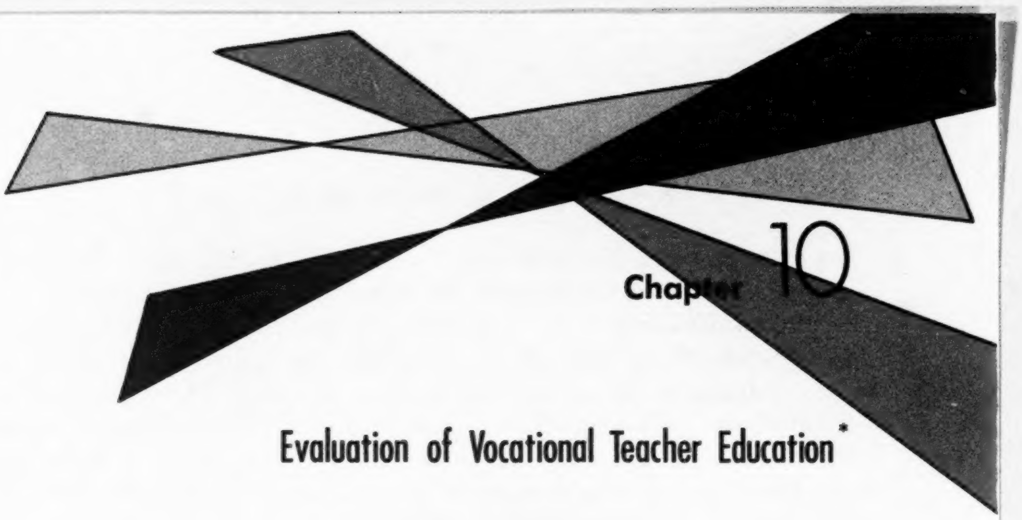

Chapter 10

Evaluation of Vocational Teacher Education*

by Douglas Sjogren

The Challenge of Evaluation

Teacher education programs are a vital component of our educational system. While the importance of curricula, instructional materials, administrative structures, and other facets of education should not be underestimated, ultimately the success of the system is dependent on the knowledges, skills, abilities, and attitudes of the personnel within the system. A corollary of this assertion is that the effectiveness of the educational system is dependent on the effectiveness of the programs that select and educate the teaching and administrative personnel. The importance of the teacher education program to the effectiveness of our educational system makes it essential that we know why programs exist, what transactions are occurring in the programs, what were and are the antecedents, what are the outcomes of the programs, why the outcomes are occurring, and whether the outcomes are consistent with societal needs and goals. These few statements state a basic rationale for evaluation of vocational teacher education and of teacher education generally.

The centrality of vocational education to the alleviation of certain societal problems has been discussed earlier. It is patent that vocational education must remain adaptable to changing conditions, and that the teacher be amenable to change. This implies that vocational teacher education must also be susceptible to change so that new programs — both preservice and inservice — can be developed when and if circumstances dictate.

As new teacher education programs develop in vocational education, it is essential that systematic evaluations be made of these programs. The purpose of the evaluations is not to "prove" that a particular program is good or best. This is virtually impossible in evaluation as it is usually done (Guba, 1969). Rather, the purpose of the evaluation is to provide information for making decisions about the program by the staff participants, by potential participants of the program, by those funding the program and by persons who might be interested in starting a similar program. The evaluation should describe well what is happening in the program and what the outcomes of the program are. The evaluation should also be designed so that it provides data and information that will permit systematic examination of the assumptions underlying the program.

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*See Appendices C and D for a self-analysis of attitudes toward evaluation.

Checking the assumptions is very important. Elsewhere in this text the assumptions underlying certain patterns of vocational teacher education are described. Each of the patterns presented is rational, and it is highly unlikely that any evaluation could prove one of them is best for all purposes. Evaluation activities could be designed, however, that would permit an examination of the validity or criticality of the assumptions. Such information would be very useful for many people. For example, nearly all vocational teacher education programs make certain assumptions about prior work experience. It would be nice if we could get some definitive information on the validity of these assumptions. Even this example is too simplified. It is very likely that work experience is important to some kinds of teacher behavior, but not others. Thus, it may be that the rationale for requiring work experience for teachers is more valid for teachers in some areas than in others. For example, extensive work experience which ended ten years ago may be of less importance for an instructor of computer programming than his keeping current with computer language developments. On the other hand, extensive and continued work experience may be very important for teaching the trades where much of the content is difficult or expensive to learn in other than on-the-job situations.

The work experience example is but one of many assumptions which underlie our teacher education programs. These assumptions should be converted into hypotheses, or should be regarded as leading to hypotheses that are subject to logical and empirical verification. Too often we accept assumptions as given without recognizing that they are no more proven than are hypotheses. Conditions may change; new evidence of relationships may be discovered. Such circumstances may invalidate what once seemed to be reasonable assumptions. The educational system must remain open to such possibilities, and evaluation efforts can and should be designed to keep the system open.

There are many purposes for evaluation of educational programs besides that of checking the assumptions underlying the program. Robert Stake (1969) has described a method of evaluation and says such inquiries depend on direct assessment, on objective testing, and on subjective judgments. Michael Scriven (1967) distinguishes between the *roles* and the *goals* of evaluation. The goal of evaluation is always the same: to determine the worth of something. The roles depend on *what* that something is and on *whose* standards of values will apply.

Evaluation activities will provide information on whether the program is meeting the needs of the students and society. The information can also be helpful for determining how the content and outcomes of various program components fit into the general program framework. Educators are taking seriously the admonition that they be held accountable for the most important objective of teaching, which is learning. A well-designed evaluation will provide information on the cost-effectiveness of the program and its marginal costs and benefits so that decisions with respect to resource allocation can be made on a more rational basis than when evaluative information is not available. Other purposes can be cited, but these are some of the most important reasons for conducting evaluation, and these reasons not only justify evaluation, but also make it imperative that we do more formal and comprehensive evaluation than we have in the past.

In the following sections of this discussion the state of the art in evaluation of teacher education programs will be reviewed briefly, and then some suggestions for designing such evaluations will be discussed.

State of the Art

Writings on evaluation of teacher education programs are rare. Troyer and Pace (1944) provide one of the few books on the topic. It is still useful for identifying techniques, processes and purposes of such evaluations. *The Handbook of Research on Teaching* (Gage, 1963) contains little on evaluation of teacher education programs, but it is an excellent source for studies that have attempted to identify variables critical to teacher effectiveness. These studies are helpful for identifying possible measures of criterion variables of teacher education programs.

The 68th NSSE Yearbook (Tyler, 1969) was devoted to the topic of educational evaluation, but it contains little on evaluation of teacher education. The 64th NSSE Yearbook (Barlow, 1965) was on vocational education. A few writers in this yearbook discuss important teacher behavior, but little space was devoted to teacher education and less to evaluation of teacher education.

The lack of literature on evaluation of teacher education programs does not mean there are no such evaluations. Actually, considerable time and effort are devoted to the accreditation type evaluation of teacher education programs by regional agencies such as the North Central Association and by the National Council for the Accreditation of Teacher Education.

Federal legislation with respect to teacher education has resulted in a number of evaluations of specific teacher education projects. Several evaluation reports are available on the NDEA Institutes (Cate, 1966; Cohen, 1965; Gray, 1966; and Thompson, 1966). Evaluative studies of the Experienced Teacher Fellowship program have also been published (Crockett, Bentley, and Laird, 1967; Crockett, Laird, and Bentley, 1968). The Education Professions Development Act has stimulated a number of innovative teacher education programs. Evaluative studies are being made of these programs, but results are not yet available.

Generally the evaluations of vocational teacher education programs have been of the accreditation type or have been one-time only evaluations of specific programs. Samson (1968) reviewed research on staffing in vocational education, and concluded that "The composite result contributes little to the development of a science of teacher education. The practices and processes of staffing are not sufficiently well understood, nor have they been adequately evaluated." Coster and Ihnen (1968) reviewed material on program evaluation in vocational education, but few, if any, of the evaluations reviewed were of teacher education programs. They observed that "the evaluation of vocational, technical, and practical arts education has been more qualitative than quantitative, more subjective than objective, more introspective and impressionistic than empirical, more *post facto* than *a priori*, and directed more to the process than to the product." This situation seems to hold with respect to teacher education program evaluations generally.

The accreditation and the one-time-only program types of evaluation do provide useful information, but they also have serious limitations. Glass (1969) indicated such a limitation of the accreditation model when he pointed out that "its practitioners do not seek to justify empirically the standards used to judge worth." In the accreditation model, the assumptions of an adequate teacher education program have been established by the experts. The evaluation then is designed primarily to determine whether the conditions defined by the assumptions have been met, but there is no empirical check on the validity of the assumptions.

Certainly the accreditation model has strengths. The opinions of acknowledged experts are important for setting standards, and expert opinions are valuable in judging whether a program is attaining the standards. Furthermore, the accreditation model provides for extensive self-study by the program staff. This self-study can be the most beneficial aspect of the activity. Expert opinion and judgment in setting and assessing standards and extensive self-study are features of the accreditation model that can and should be part of any evaluation plan. The accreditation model is of limited value, however, if it is the only evaluation activity, for its use can easily contribute to early institutionalization and rigidity of programs.

The one-time-only kind of evaluation is also limited in its usefulness, for its is typically done at or near some endpoint of a program, such as at the end of a funding period. The information thus has little or no utility for making decisions about the program while it is operating. Since most innovative programs are developmental, it is necessary that revisions be made during the activity. The one-time-only kind of evaluation rarely contributes to program development except as it provides information for making decisions about the continuation of the program beyond an expected terminal point.

Moreover, the one-time-only kind of evaluation is limited by its incompleteness. If it is focused on outcomes — and it usually is — then it neither describes sufficiently the intents and transactions of the program, nor does it provide the final data for a judgment matrix. Consequently, there is little opportunity to infer why the outcomes occurred. These circumstances limit the usefulness of the evaluation not only for making decisions about the program being evaluated, but also limit the generalizability of the results. Diffusion of a program to another setting requires information about what went into the program, what occurred in the program, who the students were, what were the characteristics of the staff, as well as what came out of the program. The one-time kind of evaluation design just does not accommodate all of these important elements.

These brief critiques should not be construed to mean that accreditation and one-time-only program evaluations are of no merit. Indeed, such evaluation designs do serve a purpose and are appropriate when limited resources preclude a more extensive study. They are most appropriately used, however, as one procedure for gathering data or as part of a more comprehensive evaluation design. Such designs are discussed in the following section.

Evaluation Designs

Glass (1969) classified evaluation designs into four types: Tylerian, accreditation, management-systems, and summative-composite. The Tylerian design attempts to determine whether or not a program is attaining its objectives (Tyler, 1951; Walbesser, 1963). The one-time-only type of evaluation is generally based on a Tylerian design, but the converse is not necessarily true. The accreditation design is used to determine whether a program meets certain standards set by experts with respect to facilities, personnel, etc. The Tylerian and accreditation types of design have been the basis for most educational evaluations.

The management-systems and the summative-composite designs are relative newcomers to the field of education. The management-systems design for educational evaluation is an application of the operations research model that has been used more or less successfully for monitoring military and industrial systems (Alkin, 1967; Stufflebeam, 1968). The summative-composite design is also a systems approach, but it is much more oriented to determining the worth or value of the components of an educational program than is the management-systems design (Scriven, 1967; Stake, 1967).

Evaluations of vocational education may follow any of these four types. The Technical Education Research Center (1969) has started an evaluation program that is based on the accreditation model. Byram (1969) has developed an evaluation design for local vocational programs that is a combination of the accreditation and Tylerian approaches with a heavy emphasis on self-study. Tuckman (1968) and Armstrong (1969) have stressed the importance of assessing attainment of objectives, and thus their approaches are Tylerian. Hastings (1969b) has presented a summative-composite model for the evaluation of vocational curricula.

The management-systems approach to evaluation seems to be applied more in vocational and manpower education than in other areas of education. Moss (1968); Moss, Purcel, and Pratzner (1968); and Robertson (1969) have described how this model may be applied to the evaluation of vocational education programs. Nelson (1969) described the use of a management-systems model in evaluating a curriculum project, and Starr (1969) presented a model for continuous evaluation of vocational programs by state departments of education.

The management-systems approach is also evident in the several economic evaluations of vocational education. Warmbrod (1968) and Coster and Ihnen (1968) reviewed many of these studies, and Kaufman (1969) presented a rationale for the economic-type evaluation along with a presentation of a cost-effectiveness study.

There is some tendency to regard cost-benefit and cost-effectiveness analyses as the only economic models of evaluation, but it is important to recognize that there are several techniques that are used by the economist and the operations researcher. Bowles (1969) has identified six different economic-type models for educational planning and evaluation and discussed the merits of each.

The writings cited in this section are general and do not make reference to evaluation of teacher education. The following section contains an attempt to apply some of these and other ideas to an evaluation design for teacher education programs.

Evaluation of Teacher Education

For evaluation to be useful for decision-making purposes, it should be part of the ongoing administrative process and not thought of as a separate operation. It should be designed so that it provides a systematic *monitoring* of the inputs into the program, the processes or the transactions that take place, the outputs of the program, and the contingencies or relationships among these components. Further, the evaluation should incorporate a study of the congruence or agreement between the intents of the program and the observations of it.

Suppose one were to start a new teacher education program in vocational education. When should the evaluation be started? From the management-systems or the summative-composite viewpoint, the evaluation activities should start at the time the program is being planned and systematic evaluation activities should occur throughout the program. This conception of evaluation differs greatly from the commonly encountered end-of-program evaluation, but it does not differ greatly from what occurs in the actual management of a program. A program administrator, the program staff, and the students are constantly evaluating the program and making decisions on the basis of the evaluations. The management-systems approach systematizes and broadens the scope of the evaluation effort so that the information is more complete, objective, and reliable than that obtained in end-of-program types of evaluation designs.

Evaluation which uses the management-systems design contrasts with end-of-program types in another way. The end-of-program design can be conducted as a quasi-experiment and often is. Traditional research methodology is used to attempt to demonstrate that one program is better than another. The execution and results of such "experiments" are questionable. With respect to execution, traditional research methodology specifies that the treatments be well-defined prior to the experiment and that the treatments be maintained as defined throughout the experiment. In most educational programs, such a restriction is difficult to adhere to, and, in fact, it may be reprehensible to do so if the treatment or some aspect of it is clearly ineffective or harmful. Moreover, the results often are questionable in that the independent variable (that is, the treatment variable) is typically so grossly defined that even though differences on some criterion variable are observed, there is very little evidence as to why the difference resulted. For example, teacher education program E may differ from program C on a number of variables such as degree of structure, content covered, ordering of content, materials used, teacher characteristics, etc. Some of these differences might be controlled if it were possible to design the experiment so that the proper sampling unit could be used, but such designs are unrealistic because of expense. Any difference or *lack* of difference between the programs on the criterion variables could be due to one or a combination of the variables operating either independently or in interaction with each other. As a result, the comparisons on the gross variable of program E with program C are virtually meaningless for generalization purposes. Certainly comparisons are made and should be made among different educational programs, but more meaningful comparisons will ensue from comparing the results of many comprehensive, monitoring-type evaluations than from comparisons resulting from inappropriate and misleading application of traditional experimental design to an evaluation.

The previous paragraph overstates the case against traditional research design. It is useful to think of evaluation in the macro and in the micro sense. The management-systems design is a macro design in that it is suited to monitoring of the overall program. The macro design is essentially descriptive rather than comparative. Within such an evaluation design, however, there may be several specific or micro evaluations. Some of the micro evaluations might also be descriptive, such as an evaluation of a specific activity in a program while other micro evaluations might be carried out with strict adherence to experimental methodology. For example, in a data processing program there may be a question of using real time experience on equipment or using simulated experiences in the introductory course. A relatively brief and well-controlled experiment could be done to determine whether these two approaches differ with respect to what the students learn and retain as well as to the resulting attitudinal differences. Thinking of evaluation in terms of macro and micro approaches is useful in that it assists one in identifying the specific components of the overall plan and helps the evaluator establish priorities for the specific components.

A desirable approach to evaluation of teacher education is described by the following statement which is a paraphrase of Stake (1969):

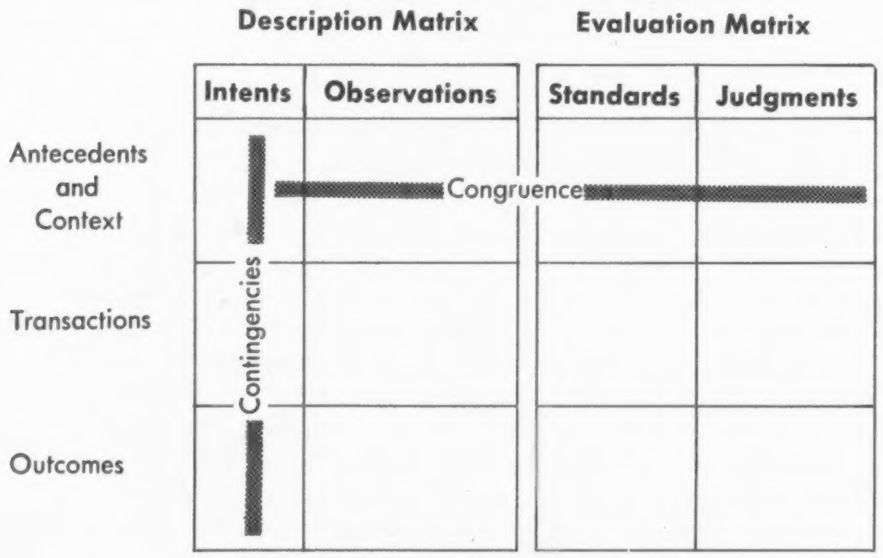
> As evaluators we should make a record of all of the following: What the teacher education staff and the institution intend to do, what is provided in the way of an environment, the transactions that occur in the program, the student progress, the side effects, and the merits and shortcomings of the program as perceived by persons from divergent viewpoints.

This orientation to evaluation is very similar to the management-systems model in that it suggests that the primary function of educational evaluation is to *monitor* the program and provide data and information for decision-making in regard to rationale, content, recruitment, materials, methods, and outcomes. The cited description is consistent with this approach and has been used because it contains the essential components of a comprehensive evaluation design.

What then are the components of a comprehensive evaluation plan like the management-systems or summative-composite designs? Stake's (1967) model for the evaluation of educational programs is useful for specifying the components of a comprehensive plan. The matrix shown in Table 10-1 is a slight revision of the Stake model.

Table 10-1

Evaluation of Educational Programs


Description Matrix
Evaluation Matrix
Intents
Observations
Standards
Judgments
Antecedents and Context
Transactions
Outcomes
Congruence
Contingencies

Congruence applies to all cells in a particular *row*.

Contingency applies to all cells in a particular *column*.

The framework of the following discussion is based on this model without specific reference to *the* model. Other comprehensive models for evaluation, cited earlier in this paper, provide for the gathering of the same kinds of information as this one, and some may prefer the wording and style of those models. The Stake model has many advantages, but it is not presented to be *the* model for evaluation.

The following is a listing of kinds of data that might be provided for in the evaluation plan. Much of the data is being collected by many programs or is readily available, and much of the data can be collected from samples rather than entire groups.

1. Antecedents and Program Context
   a. Philosophy or "sense of mission" of the teacher education agency.
   b. Manpower needs at national, regional, state, and local levels.
   c. Economic indicators and business and industry data.
   d. Demographic data for the state and local level.
   e. Characteristics of students at entry into program such as sex, age, prior education, work experience, ability measures, etc.
   f. Characteristics of program staff such as age, work experience, prior education, professional experience, special abilities, etc.
   g. Kinds of instructional materials available in terms of content, number, condition, etc.
   h. Institutional characteristics in terms of budget, goals, support staff and facilities, etc.
   i. Kinds of equipment and facilities available in terms of variety, amount, condition, etc.
   j. Legislation that might affect the program.
2. Transactions
   a. Specification of curricular content.
   b. Sequence of events in the program.
   c. Time allocation to the various content areas.
   d. Description of experiences provided in the program.
   e. Communication flow among participants and staff in the program.
   f. Participant observation data on program events.
   g. Social climate in the program.
   h. Descriptions of unintended events and variations.
3. Outcomes
   a. Student performance data on skills, attitudes, and abilities obtained periodically through the program from teacher and student evaluations as well as from special assessments done by the evaluators.
   b. Changes in program staff while participating in the program.
   c. Effects of the program on the institution.
   d. Placement of graduates.
   e. Follow-up of the program participants in terms of their behavior, supervisor's judgments of their effectiveness, and indications of participant's teaching effectiveness derived from measures of their students' performance.
   f. Cost data of the program in terms of time and dollars.

These are suggested basic data requirements, and these data should allow the various purposes of evaluation to be met reasonably well. Certainly, the data are useful only if there is a plan to analyze, interpret, and integrate the results into the management system.

An early evaluation task is to examine and specify the assumptions of the program and to determine what support there is for them from logical and from empirical studies. The evaluation should also include provision for systematically checking the logical contingencies between the intended antecedents, transactions and outcomes as compared with the empirical contingenies between the observed antecedents, transactions, and outcomes. These contingencies are relationships among the variables. An evaluator's search for contingency is, in effect, the search for causal relationships (Stake, 1969). The fact that a program intends to develop certain skills does not mean that all would agree that these are important skills.

Further, the judgments should be made not only on the worth of what is intended, but also on the worth of what is not intended. For example, a vocational teacher training program may be judged by some to be worth little if it teaches certain teaching methods, but neglects development of human relations skills. Or a program might be judged inadequate by some if there is no specific intent to recruit participants from certain ethnic groups. The point is that a program may be well-planned for achieving certain outcomes and may well achieve them. This does not necessarily mean, however, that the program is worthy. Certain intents may have been omitted that reduce the worth of the program, at least from some points of view. We cannot anticipate nor correct all omissions. It is worthwhile, therefore, to identify as many intents as possible when the program is being planned so that one may correct or justify the omission.

The evaluation plan should contain provision for continuous monitoring of manpower needs and other situations in society that have programmatic implications. This may require primary data-gathering efforts, but much relevant data are available from other governmental agencies like state and federal departments of labor and commerce, the decennial census, regional planning groups, utility companies, and local groups like Chambers of Commerce. These kinds of data provide alternative projections of quantitative and qualitative need and are important for making decisions about new programs and program changes. Unfortunately, some of these data are invalid or uninterpretable, and all require recasting into a form which is relatable to program context. A comprehensive program evaluation plan needs to provide for systematic gathering and integrating of data for the decision-making process.

The program-planning stage is another vital part of the evaluation plan. The program statement should specify the kind of person for whom the program is intended, the staff and kinds of materials that are intended, the various learning activities that are intended, and what the intended outcomes are in terms of the behavior of the student teacher as well as other possible outcomes such as products and materials. Furthermore, there should be some kind of rationale that specifies the contingencies or the logical relationships among these components.

Actually, the specification of the intents and the contingencies among them results in stating much of the rationale of the program. In terms of vocational teacher education programs, the program is intended to develop certain kinds of skills, knowledges, attitudes, and abilities in the potential teacher. These are the intended outcomes. The program design then specifies that in order to develop these skills and abilities the program intends to take a person with certain skills and abilities, and provide the necessary learning experiences so that the intended outcome level is attained.

The provision for gathering judgments in an evaluation plan is in part an application of a feature of the accreditation model. Judgments should be obtained from representatives of all interested groups who would include not only experts in the field but also administrators, other educators, employers, employees, ethnic group representatives, potential students, or other representatives of any other group that might have an interest or concern about the program.

The intents also provide the basis for the actual evaluative activities in the program. The evaluation system should be designed to provide information on the extent to which the intended inputs are in fact attained, the transactions take place as planned, and there is progress toward the objectives. This information should be obtained on an ongoing basis so that feedback can be used for program decisions. For example, if the type of student for whom the program was intended is not recruited, it may mean that certain changes should be made in the program or that a different set of outcomes should be stressed. Or perhaps if a learning experience does not occur as intended, the program manager or the teacher will decide that a substitute experience should be offered.

Comment was made earlier on the importance of identifying and validating the assumptions of the program. The validation at the program-planning stage is based on logical reasoning and on available empirical studies. As the program is implemented, the data and information gathered in the evaluation will permit further examination of the assumptions. The contingencies among the antecedents (inputs), transactions, and outcomes of the program can and should be checked with the empirical information available from the evaluation.

Many of the intended outcomes of a teacher education program are not observable while the student is in the program. It may be intended, for example, that the student as a teacher will be able to adapt his courses to new job situations. An example of this circumstance is the problem faced by agriculture teachers in adapting their curricula to meet the needs of agri-business occupations. Outcomes such as this are really only observable after the student has had some teaching experience. Consequently, the evaluation should include a systematic follow-up of the graduates of the program. The evaluators should also determine whether outcomes observable in the program are related to the long-range outcomes. This would permit certain predictions to be made in other similar programs about long-range behavior based on the behavior observed in the current program.

The evaluation design for a program is based primarily on the various intents of the program. However, the evaluators should be sensitive to unintended events or outcomes as well, for these may be very important and should never be ignored. The fact that they are unintended precludes any systematic evaluative planning, but a comprehensive monitoring system will be designed to be sensitive to the unexpected events and results of the program. Certainly the unusual or unintended event or result may be positive or negative.

A comprehensive evaluation design is not implemented quickly. It may be necessary to implement the design in stages. Perhaps the first year will be devoted to implementing procedures for assessing student growth; in the second year procedures for observing classroom transactions will be introduced, and so on. As the procedures are refined, they can be continued with less effort and with less disruption to the program.

Evaluation efforts will take time and money, however, and the administrator must allocate sufficient resources for the evaluation to be meaningful. If sufficient time and money are allocated to permit the development of an adequate evaluation system, it will produce results. The program will improve because it will have real data and information on a continuing basis for decision-making, and the program administration will be sensitive to the strengths and weaknesses of the program as they occur and can take immediate action.

Education in total will benefit from the implementation of comprehensive evaluation designs in specific programs. Dissemination and diffusion of important educational innovations are presently inhibited by inadequate evaluation reports. It is a rare report that really describes an educational program. The comprehensive evaluation design will permit adequate reports, and, with adequate reports, educators can compare programs and make their decisions on more complete and relevant information than they have now. A recent publication of the American Institute for Research (Hawkridge, *et al.*, 1970) on evaluation reporting should have a favorable impact on the quality and usefulness of evaluation reports.

Evaluation must be kept in perspective, however. The primary task is the preparation of teachers, and it goes without saying that the principal portion of the available resources must be allocated to that task. However, a meaningful evaluation can be developed for *any* program without an undue burden on the resources. If the evaluation is an integral and routine part of the management-system, many aspects of it can become quite routine and inexpensive. As certain evaluation activities become clerical in nature, new activities can be added. Evaluation activities that commonly are employed are expensive in the sense that minimal benefit is derived from the cost. A comprehensive, on-going evaluation plan may cost somewhat more than the end-of-program or accreditation type, but it will yield much more.

Educational decisions have been made for too long on an intuitive basis or with a philosophy of "hold-the-line." It is time that we examined the assumptions of our programs by truly examining what our programs are doing. To do this requires more than an end-of-the program achievement test. Our assumptions are being challenged right now by many segments of society, especially by some students. Teacher educators must respond, not by defending our position without data, but by instituting procedures that will provide valid checks. What better place to do this than in our teacher education programs.

Hastings (1969a) has commented on the fact that educational evaluation must recognize its methodological dependency on a number of disciplines such as economics, sociology, anthropology, psychology, and political science. A review of the listing of the kinds of data needed for an evaluation plan supports this contention. Teacher educators must break out of their educational research and standardized testing orientation to evaluation in order to obtain both the breadth and depth that is needed.

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Chapter 11

Summary and Conclusions

by Rupert N. Evans and David R. Terry

The Task of Vocational Teacher Education

Vocational education and vocational teacher education are alike in purporting to prepare persons for effective employment in the real world today. The introduction to this book indicates ways in which teacher education has *failed* in this task. Jack Willers goes further by pointing out that we must be concerned about jobs of the future, and about preparing people to help make the decisions by which the future will be shaped. Clearly the task of vocational teacher education is much greater and more difficult than we have conceived it to be.

To understand the task of vocational teacher education, it is first necessary to understand the task of vocational education. Evans (1971, p. 2) claims that the goals of vocational education are threefold: to meet the manpower needs of the nation and of society; to increase the options of individual students; and to lend intelligibility to general education. Willers urges that vocational education concentrate on means as well as goals, on processes as well as products, and on an understanding of the interdependency of occupations. He stresses the need for providing a balanced view of the ways in which technology creates opportunities and problems, always emphasizing the need for the individual to exercise control of his or her personal experience and future.

At one time it was assumed that all of mankind must work to survive. It is likely that most vocational educators hold this view, excepting from this mandate only those who are physically unable to work. But as Willers points out, there is a growing acceptance of the idea that the future will give man a choice of working or not working. The role of vocational education could, in such a future, include instruction which will lead each individual to make a better decision as to whether his or her particular life style will best be served by work or nonwork.

These and many other tasks of vocational education are outlined in Chapter 1. Each has implications for teacher education. But perhaps the greatest contribution Willers has made is to indicate the enormous complexity of the task of the vocational educator. These complexities cannot be mastered by the worker whose preservice and inservice teacher education is limited to four college courses taken during his first five years of teaching. Indeed they cannot be understood fully by the teacher who spends four or more years in college work which emphasizes a limited range of relevant knowledge. The greatest task of vocational teacher education is to devise ways in which teachers can be prepared to teach accurately, efficiently, and broadly, so that their students will have maximum opportunities to control their own future environment.

Methods of Teaching Teachers

Most discussions of types of teacher education are descriptive of existing or proposed preservice or inservice programs. The authors of Chapters 2 and 3, Professors Moss and Hill, have concentrated, instead, on the assumptions underlying such programs. The assumptions underlying both preservice and inservice vocational teacher education have been presented in an attempt to make explicit and overt those assumptions which for too long have been only implicit and perhaps covert. As a result, these authors have identified, within vocational teacher education, a number of assumptions which appear to be in direct conflict. A mere description of programs would not have produced these evidences of disagreement.

In both chapters, the word "assumption" is used in the sense of a supposition which flows naturally from known facts and can be used in part to explain these facts. Many of these assumptions could be used as hypotheses which could be tested through research, but very few of them have been tested to date. Tested or not, they form the most explicit picture to date of why vocational teacher education programs are as they are. It is hoped that their statement will lead to further questioning and to the generation of further assumptions and hypotheses.

Preservice Education

Moss makes the common assumption that instructional teams made up of different levels of paraprofessionals and professionals will be used more and more in education. He points out for the first time, however, that there really are and should be two different types of beginning vocational teacher. One type, the noncareer teacher, provides (a) up-to-date, specialized occupational competence, and may serve as (b) a "model" for students to emulate, or as (c) an interpreter between students and the rest of the instructional team. Role (a) is particularly important in a field experiencing rapid technological change. Roles (b) and (c) are especially valuable when the student lacks self-confidence in his ability to adapt to a different culture and when the "model" is a person from the student's subculture who can provide visible evidence of personal success in the culture to which the student seeks to adapt, or within which he or she seeks to succeed, with a minimum of adaption.

The second type of beginning teacher looks upon teaching as a career and therefore has been willing to spend a much longer time preparing for the teaching role. Typically he or she is a college graduate, and should be well prepared to teach about occupations, provide related instruction, and to provide the basic instruction which tends to change less rapidly than do the advanced levels of occupations. After acquiring more experience, this career vocational teacher will be in a position to help career academic teachers make occupational applications of their subject matter, and can help noncareer vocational teachers present their subject matter more effectively.

Noncareer teachers tend to acquire their subject matter competence at a time when they expect to continue as a worker in their chosen field, rather than to become a teacher. Usually they acquire this competence in a work setting; though in the armed forces, especially, graduates of technical programs may be employed as noncareer teachers immediately upon graduation from the school in which they will teach. Career teachers, on the other hand, tend to secure their subject matter competence after they have decided upon teaching as a career.

Trade and industrial education leaders tend particularly to favor persons who acquired their competencies on the job at a time when they did not expect to become teachers, but who later chose to become career teachers. Though there is little evidence to support the assumption that these people make better teachers, it is held so widely that it may have validity. It seems clear, however, that this pattern of preparation is widely misused, with noncareer teachers filling career teacher posts. Initially they may be reasonably effective in such positions, but with the passage of time and the obsolescence of their occupational skills, and without the career teacher's motivation to keep up-to-date, they may become tenured has-beens.

Moss provides a two-by-two analysis of methods of acquiring professional competence, with the two variables being place of learning and degree orientation. These analyses, plus consideration of ways of acquiring general and knowledge acquisition competencies, lead to a series of recommendations for the preservice preparation of beginning teachers, which are summarized in Table 3-5 (p.66).

Most interesting is the fact that Moss is led inevitably to the conclusion that while noncareer and career teachers need quite different preparation, the methods of preparing teachers for each of the subject matter fields of vocational education should be essentially the same. This recommendation is in sharp contrast to present statements of preferred practice, which call for career trade and industrial teachers to be prepared in markedly different ways from career agriculture teachers. It is probable, however, that trends in the preparation of vocational teachers actually being employed by secondary and post-secondary schools are approaching Moss's conclusions and diverging from past statements of preferred practice in trade and industrial education.

Inservice Education

Hill points out a number of inconsistencies in past practice in inservice education, and gives a number of useful examples which help to describe typical inservice education problems. Improvement in performance and keeping up-to-date in the discipline, the occupational field, and in pedagogy are all needed. Inservice education must build on sound preservice preparation if it is to be effective. Too often we do not recognize that inservice education serves such diverse purposes as learning to accept and cope with individual differences, and to develop and maintain a zest for occupational teaching.

Hill recognizes, as does Moss, many commonalities across the various fields of vocational education, and suggests that some inservice programs should include all types of vocational educators. At present, inservice programs tend to be segregated rigidly by field.

Responsibility for inservice education falls squarely on the shoulders of the individual teacher; but local schools, professional and occupational organizations, state education agencies, employers of vocational education students, and institutions of higher education all have obligations to provide the education needed by the teacher. A major weakness has been the fact that there have been no effective administrative structures to facilitate inservice education planning. Decisions are often made by persons not knowledgeable of actual needs.

Inservice programs should be available in wide variety, but programs for individuals should be individually tailored and planned on a long term basis. Individual planning is needed not only because of individual differences in capacity and in type of work assignment, but because preservice programs differ markedly. Too often, inservice education is planned on a mass basis, using assumptions which are more implicit than explicit, rather than being planned on the basis of a careful analysis of individual needs both of teachers and of vocational students.

Curriculum

As the concept of career ladders and lattices is expanded into a real concept of career education, a number of components will need to be added to the teacher education program. This is only one of several examples of ways in which changes in vocational education curricula and changes in the evaluation of the effectiveness of these curricula inevitably affect vocational teacher education curricula. That so many of the curriculum patterns are of recent origin is evidence of a broad acceptance of the need to rectify the prior inadequacies of vocational education. In each of these cases, teacher education is the follower, rather than the leader; though to be fair, we should note that individual vocational teacher educators have often been in the vanguard of vocational curriculum change. Because of high volatility not only within vocational education but within other subject areas and disciplines, the TT's and TTT's of tomorrow will be called upon constantly to analyze and evaluate the curricula for which they will be preparing teachers in terms of the changes taking place or needing to take place.

One of the reasons for rapid change in vocational curricula is found in rapid change within an occupational field for which vocational students are being prepared. Not only will (1) changes of basic principles be occurring, but also (2) changes *within* basic principles will be occurring. For example, many changes were made within the basic knowledge and principles of the reciprocating airplane engine over the years, but when the jet turbine engine was developed, there was a basic change in the principle of airplane propulsion. Jacob Stern[1] has suggested four types of volatility related to these two kinds of changes: Type A where there is low volatility of change in both 1 and 2; Type B where there is high volatility in both 1 and 2 change types; Type C where there is high volatility in 1 but low volatility in 2; and finally Type D where there is low volatility in 1 and high volatility in 2. To prepare a vocational student for an occupation of Type A, one would most likely develop a very practical offering with little or no theory while in Type B just the reverse would likely be the case. One would certainly have a difficult time justifying large expenditures for equipment in a Type B situation. An analysis of these volatility types may suggest particular student groups for which the curriculum should be prepared as well as the type of teacher who ought to prepare and present the information. Surely a teacher who does not feel at ease on the cutting edge of research and development would be uncomfortable in a Type B or even in a Type C situation. At present we know even less about the teacher who is needed than we know about the vocational curriculum. Still less is known about the type of teacher education curriculum which is needed.

Simpson and Ellis point out that a major problem in curriculum for vocational teacher education is a lack of agreement as to the basic foundations of vocational education. But perhaps their major contributions lie in their suggestions for common elements in a curriculum which could serve all types of vocational educators and in their suggestions of ways in which the special needs of students should be met. This latter point is particularly well exemplified by their treatment of the career needs of women.

Organizational Structure and the Context of Vocational Teacher Education

One of the major organizational problems in vocational teacher education grew directly from a series of administrative decisions dating back more than fifty years. The Smith-Hughes Act of 1917 provided explicitly for the "training of teachers . . . of agricultural, . . . trades, industrial or home economics subjects." Unfortunately, this legislation was interpreted, not as a vocational education act, but as an act supporting three separate, unrelated vocational subjects. It was natural, therefore, to assign teacher education functions in universities to those departments or colleges which were most closely related to the subject matter of these separate subjects. As additional subjects were added by subsequent legislation, their teacher education functions were similarly dispersed with the result that vocational teacher education programs and curriculums developed independently and had little relationship to each other. In a classic understatement, the Essex Advisory Council of 1968 said: "This practice does not foster the concept of a broad view of *vocational* teacher education."

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[1] Jacob Stern, Associate Professor of Vocational and Technical Education, University of Illinois, has developed and presented these ideas to his classes in vocational curriculum, but as yet they are not in print.

In the early 1960's a trend began which has resulted in the creation of departments of vocational teacher education (integrated organizational structure), or, where this seemed impractical, in increased cooperation among separate departments of agricultural education, business education, etc. (confederated organizational structure). Where the various parts of vocational teacher education have been parceled out to separate universities within a state (independent-limited offerings), coordination has proved more difficult, but progress has been made in establishing state liaison councils which bring together representatives of these separate institutions. A few universities still have uncoordinated programs which in total represent all or most phases of vocational teacher education (independent-multiple offerings).

Taylor and Miller feel that both the confederated and integrated approaches are feasible, but find little to commend independent (uncoordinated) organizations. Unfortunately, in some institutions the two former organizational structures have more form than substance. Where only the form exists, they suffer all of the disadvantages of the independent organization, though they retain the possibility of adding substance in the future. In the opinion of the editors, the confederated structure is most likely to rely on form, with easy decisions made in harmony, but tough decisions foundering on the rocks of departmental or college academic freedom. There appears to be a growing tendency to use the confederated structure for baccalaureate programs and the integrated structure for graduate programs.

While most preservice vocational teacher education is conducted by universities, and most inservice education is sponsored by local education agencies, it is the state which has ultimate responsibility for both programs. Few states seem to have recognized this responsibility, which cannot be delegated, though of course authority can and is delegated frequently. One common method of accepting responsibility is to assign one or more state staff members to see that adequate teacher education is provided.

Forces Affecting Change

Certification of teachers has had relatively little effect upon vocational teacher education, since emphasis is placed primarily on subject matter competence rather than on the skills of teaching. State approval of vocational teacher educators, which is a form of certification, may have a positive or negative effect on innovation, depending on the ways in which it is exercised. Vocational education is the only subject field in all of teacher education which is subject to such state certification of university faculty members.

Teacher organizations, whether professional or not, seem generally to support the status quo more frequently than they promote change. Reward policies for instructors in universities and in the public schools often have a similar effect. On the other hand, the views of employers and of students are heard increasingly, and often promote desirable change.

Too often, vocational teacher educators assume that they need to prepare teachers only for programs in public secondary schools and community colleges. It is clear that during the 1960's the rate of growth for vocational programs under the Manpower Development and Training Act (MDTA) was far greater than for those under the Vocational Education acts. Many of the teachers in the MDTA programs receive absolutely no teacher education, especially those who teach in the on-the-job portion of the program. But in institutional MDTA programs many teachers are now receiving inservice education through the Area Manpower Institutes for Development of Staff (AMIDS). This program, supported entirely by federal funds, operates from ten centers throughout the United States, with only one of these centers based in a university. AMIDS appears to have had little effect on traditional teacher education programs, largely because the traditional vocational teacher educator does not even know that AMIDS exists. If AMIDS continues to develop in effectiveness, however, it could encourage a great deal of change through offering teachers and schools an alternative to a too complacent vocational teacher education, often waiting within university walls for clients to come to it. AMIDS takes education out to wherever it is needed, and tailors the instruction to the need, rather than presenting a prescribed course.

Estimating Supply and Demand for Vocational Education Personnel

One of the more serious problems affecting the planning of vocational teacher education has been the lack of manpower information. Even the scanty information available is not in a form which allows adequate decisions to be made. If, as Foran and Kaufman have pointed out, the basic purpose of vocational education is to prepare individuals to enter the world of work, then vocational educators must have a working model of that world along with some index of how its job market is changing. Further, there must be an adequate system developed for determining the completions in vocational education as measured by those who leave formal schooling to enter employment at any point in time and for whatever reason.

As the scope of the world of work changes, along with the population of individuals being introduced to it, the demand for various types of vocational TT's and TTT's will change even more rapidly. Neither of the chapters on manpower needs appears to give adequate attention to the effects of acceleration on demand for teachers and teacher educators (Evans, 1971). Based on national figures, Foran and Kaufman have projected to 1975 the annual needs for vocational education teachers at the secondary, post-secondary, and adult levels, but they make no projections for elementary school teachers of vocational education and assume that this will be a level of minor thrust.

Whether or not one accepts the methods they use or the accuracy of their forecasts, the descriptive data they present, though admittedly inadequate, should be quite useful. If manpower forecasts are accepted as being accurate, they may have far reaching effects on teacher education enrollments and on departmental and curriculum developments. Somer's chapter, however, points out that the process of forecasting manpower needs in vocational education is in its infancy. In place of the Foran and Kaufman methods, he suggests use of less sophisticated and shorter-range projections based on trends in enrollments and studies of changes in employment experience and demand for graduates. Neither chapter explores the use of a simplifying assumption of interchangability of vocational teachers across levels, across public and private schools, and across on-the-job training and institutional programs. Under this assumption, only the occupational field taught would be noninterchangable.

Moss and Foran and Kaufman have all pointed out that a large percent of vocational teachers do not come through teacher education programs. Foran and Kaufman suggest that 70% of the distributive education teachers, 90% of both technical and trade and industrial teachers, and an unknown percent of allied health occupations teachers are not currently coming into the teaching profession through this route. Presumably almost all of the home economics, agriculture, and business teachers do come from vocational teacher education preservice programs. The former figures bespeak a warning and a call for further development of teacher education programs in at least those areas, since Foran and Kaufman indicate that the 1975 combined projected enrollment in the four curricula which have small teacher education programs will amount to 39% of the projected secondary school enrollment.

Evaluation

The need for evaluation runs through all of the chapters in this book. The Sjogren chapter is a succinct treatment of the state of the art in this field. While it appears as the last of the substantive chapters, Sjogren agrees with the other authors that evaluation is by no means the last thing to consider in educational development.

Earlier it was noted that scholarly consideration of the teacher education process is rare. Sjogren finds that this is also true of the evaluation of teacher education, though a great deal of time and effort has gone into accreditation and other one-time-only studies.

One of the major problems has been an attempt to conduct teacher education evaluations as experiments which have the goal of deciding whether one approach is "better" than another. Sjogren gives several reasons why this method of study generally is ill-advised. A number of suggestions for comprehensive evaluation programs are presented, together with descriptions of the types of data needed.

Bloom, Hastings and Madaus (1971) take the position:

> that the main task of the education process is to change the learners in desirable ways, and that it is the primary task of teachers and curriculum makers to specify in precise terms the ways in which students will be altered by the learning process. There is a series of decisions which teachers must make if they are to be effective in helping learners change in the desired ways, and it is the role of evaluation to provide appropriate evidence to help both teachers and learners attain the goals of instruction. (p. 17)

It is too seldom noted that teacher educators are teachers also and have the same needs for help from evaluation processes.

Values and Vocational Teacher Education

This book and its summary began with a consideration of values and of the future. Both end with a similar consideration. Evaluation, not only in name but in practice, is inextricably associated with values. A similar association exists with all planning for teacher education.

During the Twentieth Century, educators through both de facto and de jure processes have removed from education the consideration of almost all values except the academic values of student-teacher relationships. The apparent result has been that an amoral ethic has become a part of the curriculum. Although the efficacy of the ideals of the protestant ethic has been questioned in some parts of society, in the work place these ideals are still maintained. Youth who have been taught within the sheltered confines of the schools that only their own value systems need be considered and that the protestant ethic is passé may expect to be shocked rudely when they enter the real world of work.

If, as Thomas Green suggests, work is a "quest for potency" which allows us to express our individuality, then our leisure society may be closer than we think. He distinguishes sharply between such work and "labor," which involves tasks that tend to repress individual quests. Similar distinctions can be made between "leisure" and "free time." Nursing homes and "golden hour" centers are full of testimonials that leisure must be measured by some scale other than simply free time. Four-day and three-day "labor" weeks (Green, 1968, p. 65) may well give rise to complementary one-day, two-day and more "work" weeks where man may find the opportunity to express himself through leisure. Certainly this is better than a total of seven days composed solely of labor and free time, however they are distributed. But still better would be a week made up of work and leisure. For this concept to be put into practice, vocational TT's and TTT's must see that the teacher education curriculum is designed to provide the teacher with the opportunities needed to support the self realization of both teacher and student. "A society without labor" (in Green's sense) is conceivable, but a society without work is not (Evans, 1971, p. 93). It is a major goal of vocational teacher education to move society from labor to work, and to assist general education to move society from free time to leisure, for both steps increase the options of individuals. The major goal of this book is to help teacher education to take additional steps in this direction.

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Appendices

Appendix A

Planning Council Members
Teacher Education and Vocational-Technical Education Institute
April 7, 1970

Dr. George L. Brandon	American Vocational Association, Inc.	Washington, D.C.
Mr. Sherwood Dees	Director of Vocational Education	State of Illinois
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Dr. William Loomis	U.S. Office of Education	Washington, D.C.
Dr. R. Frank Mensel	American Association of Junior Colleges	Washington, D.C.
Dr. John R. Miles	U.S. Chamber of Commerce	Washington, D.C.
Dr. Leon Minear	U.S. Office of Education	Washington, D.C.
Dr. Joseph F. Murphy	Director of Vocational Education	State of Connecticut
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Dr. Robert Taylor	The Ohio State University	Columbus, Ohio
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Appendix B

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October 5-9, 1970

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Appendix C

CIRCE[1] Attitude Scale No. 1.4

Complete this attitude scale before turning to Appendix D.

Attitudes toward Educational Evaluation. Below are a number of statements about the evaluation of educational programs. A program can be a lesson, a course, a whole curriculum, or any training activity. Consider each statement as a statement of opinion. If you agree at least a little bit with the statement, circle the letter A. If you disagree even a little bit with the statement, circle the letter D. If you both agree and disagree, or if you have no opinion, leave the letters uncircled.

A = AGREE **D = DISAGREE** **Blank = Neither**

1. A D The **major** purpose of an educational evaluation study should be to gather information that will be helpful to the educators.
2. A D It is important for the program evaluator to find out how well various people like the program.
3. A D Generally speaking, an educational program should be evaluated with reference to one or more "control" programs.
4. A D The evaluator should accept the responsibility of finding the strongest, most defensible, and publicly attractive points of the program.
5. A D In evaluating a program, it is at least as important to study and report on the types of teaching as it is to study and report on the amount of learning.
6. A D The evaluator should draw a conclusion as to whether or not the goals of the program are worthwhile.
7. A D It is more important to evaluate a program in comparison to what other programs do than to evaluate it with reference to what its objectives say it should do.
8. A D Principals and superintendents should not gather data about the quality of instruction in the classroom.
9. A D The task of putting educational objectives into writing is **more** the responsibility of the evaluator than that of the educator.

10. A D It is essential that the full array of educational objectives be stated before the program begins.

11. A D Evaluation studies would improve if they gathered more kinds of information, even if at the expense of gathering less reliable information.

12. A D Evaluators should ignore data that cannot be objectively verified.

13. A D Education should have more of an engineering orientation than it now has.

14. A D The job of an evaluator is mostly one of finding out how well students learn what they are supposed to learn.

15. A D Evaluation should aid an educator in revising his goals even while the program is in progress.

16. A D The process of decision-making about the curriculum is one of the weakest links in the present operation of the schools.

17. A D Educators have some important aims that **cannot** be stated adequately by anyone in terms of student behaviors.

18. A D Information from an evaluation study is not worth the trouble it makes.

19. A D The first job in instruction is the formulation of a statement of objectives.

20. A D A teacher should tell his students any and all of his teaching objectives.

21. A D The **major** purpose of educational evaluation is to find out the worth of what is happening.

22. A D The evaluator should be a facilitator more than a critic or reformer or scholar.

23. A D Some school experiences are desirable because they round out a child's life—whether or not they increase his competence or change his attitudes.

[1] Stake, Robert E. Urbana, Illinois: Center for Instructional Research and Curriculum Evaluation, University of Illinois, 1971.

Please turn over

24. A D An evaluator should find out if the teaching is in fact the kind that the school faculty expects it to be.

25. A D Whether or not an evaluation report is any good should be decided pretty much on the same grounds that research journal editors use to decide whether or not a manuscript should be published.

26. A D The **main** purpose of evaluation is to gain understanding of the causes of good instruction.

27. A D Description and value judgment are equally important components of evaluation.

28. A D In conducting an evaluation, there is no justification for the exercise of subjective judgment of any kind by the evaluator.

29. A D Educational evaluation is a necessary step in the everyday operation of the school.

30. A D The strategy of evaluation should be chosen primarily in terms of the particular needs the sponsors have for evaluation data.

31. A D The educational evaluator should attempt to conceal all of his personal judgment of the worth of the program he is evaluating.

32. A D The sponsor of an evaluation should have the final say-so in choosing or eliminating variables to be studied.

33. A D The main purpose of educational evaluation is to find out what methods of instruction work for different learning situations.

34. A D Parents' attitudes should be measured as part of the evaluation of school programs.

35. A D An evaluator finds it almost impossible to do his job without intruding upon the operation of the program at least a little.

36. A D All important educational aims can be expressed in terms of student behaviors.

37. A D Some educational goals are best expressed in terms of teacher behaviors.

38. A D It is essential that evaluation studies be designed so that the findings are generalizable to other curricula.

39. A D An evaluation study should pay less attention to the statistical significance of a finding than an instructional research study would.

40. A D Evaluation interferes with the running of schools more than it helps.

41. A D Little evaluation planning can be done before you get a statement of instructional objectives.

42. A D The leader of an evaluation team should be a teacher.

43. A D The entire school day and the entire school experience should be divided up and assigned to the pursuit of stated educational goals.

44. A D An evaluation of an educational program should **include** a critical analysis of the value of the goals of the program.

45. A D Every teacher should have formal ways of gathering information about the strengths and shortcomings of his instructional program.

46. A D Money spent on evaluation contributes more to the improvement of education than any other expenditure.

47. A D There just is no way that careful and honest evaluation can hurt a school program.

48. A D If an evaluation study is well designed, the primary findings are likely to improve decisions made by administrators, teachers, and students themselves.

49. A D When the evaluator has to choose between helping this staff run its program better and helping educators everywhere understand all programs a little better he should choose the latter.

Appendix D

CIRCE[1] Attitude Scale No. 1.4b

Scoring of attitudes toward educational evaluation should be made following completion of CIRCE Attitude Scale in Appendix C.

Different people have different ideas about the evaluation of educational programs. Some believe that maintaining a good school and improving instruction require carefully planned evaluation. Others believe that evaluation activities interfere with teaching and learning, doing more harm than good.

Different people see different purposes for educational evaluation. Certain people are oriented more to pupil behaviors or to classroom conditions or to other aspects of the program.

Responses to the items on this attitude scale provide us with 6 scale scores. When plotted on the profile sheet below they are expected to indicate the respondent's attitudes toward educational evaluation.

Directions for Self Scoring

Start in the opposite corner of this page. For each scale check your sheet to see how you responded to each of the eleven items. For Example, with SCALE V how did you mark Item #2? If you marked it "A" put a check in the parentheses. Put the number of checks in the box. Mark each horizontal scale (at the right) at the number-point shown in its box. Draw your profile by connecting your scores on the five scales, I-V. Then find your CONFIDENCE score.

SCALE I

3 A ( )
11 D ( )
25 A ( )
26 A ( )

30 D ( )
31 A ( )
32 D ( )
33 A ( )

38 A ( )
39 D ( )
49 A ( )

Total ☐

I. A RESEARCH orientation to Evaluation 0 1 2 3 4 5 6 7 8 9 10 11

The person high on this scale appears to believe that evaluation should rely on precise measurement and statistical analysis to gain **general understanding** of why programs do or do not succeed.

SCALE II

1 A ( )
4 A ( )
6 D ( )
13 D ( )

15 A ( )
16 D ( )
22 A ( )
28 D ( )

30 A ( )
32 A ( )
35 A ( )

Total ☐

II. A SERVICE orientation to Evaluation 0 1 2 3 4 5 6 7 8 9 10 11

The person high on this scale appears to believe that evaluation should be designed according to the **needs of the educators** involved so as to aid them in their present work and future decisions.

SCALE III

5 A ( )
9 A ( )
17 A ( )
20 D ( )

22 A ( )
23 A ( )
24 A ( )
34 A ( )

36 D ( )
37 A ( )
42 A ( )

Total ☐

SCALE IV

7 D ( )
9 D ( )
10 A ( )
14 A ( )

15 D ( )
17 D ( )
19 A ( )
36 A ( )

37 D ( )
41 A ( )
43 A ( )

Total ☐

SCALE V

Item 2 A ( )
4 A ( )
6 A ( )
12 D ( )

21 A ( )
27 A ( )
28 D ( )
31 D ( )

34 A ( )
39 A ( )
44 A ( )

Total ☐

START →→→→

III. A TEACHING orientation to Evaluation

0 1 2 3 4 5 6 7 8 9 10 11

The person high on this scale appears to believe that evaluation should be focused considerably on the **quality of teaching** and should discover the intrinsic merit in facilities and in instruction.

IV. OBJECTIVES orientation to Evaluation

0 1 2 3 4 5 6 7 8 9 10 11

The person high on this scale appears to believe that instruction, and therefore evaluation, should be focused considerably on apriori statements of objectives, that the merit of the program is largely indicated by the **success of students** in reaching those objectives.

V. A JUDGMENT orientation to Evaluation

0 1 2 3 4 5 6 7 8 9 10 11

The person high on this scale appears to believe that educational evaluation is largely a matter of establishing the worth of the program for various purposes **as perceived** by various groups of persons in and around the program.

To obtain an overall......................**CONFIDENCE IN EVALUATION score,**
do the same thing with
the check-list at the right.

0 1 2 3 4 5 6 7 8 9 10 11

☐

Confidence Scale

Item 8 D ( )
12 D ( )
15 A ( )
18 D ( )

29 A ( )
34 A ( )
40 D ( )
45 A ( )

46 A ( )
47 A ( )
48 A ( )

[1] Stake, Robert E. Urbana, Illinois: Center for Instructional Research and Curriculum Evaluation, University of Illinois, 1971.

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